Tutorial01 Answers for No.9124

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <5, -3>) \\ ans.3 = (AB = 5\,i - 3\,j) \\ ans.4 = (|AB| = (\sqrt{34}, 5.831)) \\ ans.5 = (u = 0.857\,i - 0.514\,j) \\ ans.6 = (c = 5.145\,i - 3.087\,j) \\ ans.7 = (d = -4.287\,i + 2.572\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <10, -3>) \\ ans.3 = (AB = 10\,i - 3\,j) \\ ans.4 = (|AB| = (\sqrt{109}, 10.440)) \\ ans.5 = (u = 0.958\,i - 0.287\,j) \\ ans.6 = (c = 5.747\,i - 1.724\,j) \\ ans.7 = (d = -6.705\,i + 2.011\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-5, -5, 3>) \\ ans.2 = (AB = -5\,i - 5\,j + 3\,k) \\ ans.3 = (|AB| = (\sqrt{59}, 7.681)) \\ ans.4 = (u = -0.651\,i - 0.651\,j + 0.391\,k) \\ ans.5 = (c = -3.255\,i - 3.255\,j + 1.953\,k) \\ ans.6 = (d = 4.557\,i + 4.557\,j - 2.734\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-6, 18, 4>) \\ ans.2 = (AB = -6\,i + 18\,j + 4\,k) \\ ans.3 = (|AB| = (2\sqrt{94}, 19.391)) \\ ans.4 = (u = -0.309\,i + 0.928\,j + 0.206\,k) \\ ans.5 = (c = -1.857\,i + 5.570\,j + 1.238\,k) \\ ans.6 = (d = 2.166\,i - 6.498\,j - 1.444\,k) \end{bmatrix}$$

$$Ans5 = <-16, -15>, \quad , Ans6 = <-40, 38>, \quad , Ans7 = <-26, 30, 17>, \quad , Ans8 = <18, 37, 11>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [10, 10.000]] \\ ans.2 = \begin{bmatrix} b = <-48, -36> \\ |b| = [60, 60.000] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <56, 42> \\ |c| = [70, 70.000] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <18, -8> \\ |a| = [\sqrt{194}, 13.928] \\ |b| = [\sqrt{194}, 13.928] \\ |a + b| = [2\sqrt{97}, 19.698] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <8, 18> \\ |a| = [\sqrt{194}, 13.928] \\ |b| = [\sqrt{194}, 13.928] \\ |a - b| = [2\sqrt{97}, 19.698] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-3, -7, 2> \\ |a| = [\sqrt{219}, 14.799] \\ |b| = [\sqrt{149}, 12.207] \\ |a + b| = [\sqrt{62}, 7.874] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <13, -19, -12> \\ |a| = [\sqrt{219}, 14.799] \\ |b| = [\sqrt{149}, 12.207] \\ |a - b| = [\sqrt{674}, 25.962] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 50.194\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 220.601\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.9197

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <5, 9>) \\ ans.3 = (AB = 5\,i + 9\,j) \\ ans.4 = (|AB| = (\sqrt{106}, 10.296)) \\ ans.5 = (u = 0.486\,i + 0.874\,j) \\ ans.6 = (c = 2.914\,i + 5.245\,j) \\ ans.7 = (d = -3.400\,i - 6.119\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <-8, -3>) \\ ans.3 = (AB = -8\,i - 3\,j) \\ ans.4 = (|AB| = (\sqrt{73}, 8.544)) \\ ans.5 = (u = -0.936\,i - 0.351\,j) \\ ans.6 = (c = -8.427\,i - 3.160\,j) \\ ans.7 = (d = 4.682\,i + 1.756\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <3, -9, -5>) \\ ans.2 = (AB = 3\,i - 9\,j - 5\,k) \\ ans.3 = (|AB| = (\sqrt{115}, 10.724)) \\ ans.4 = (u = 0.280\,i - 0.839\,j - 0.466\,k) \\ ans.5 = (c = 1.399\,i - 4.196\,j - 2.331\,k) \\ ans.6 = (d = -1.679\,i + 5.036\,j + 2.798\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <3, 6, -5>) \\ ans.2 = (AB = 3\,i + 6\,j - 5\,k) \\ ans.3 = (|AB| = (\sqrt{70}, 8.367)) \\ ans.4 = (u = 0.359\,i + 0.717\,j - 0.598\,k) \\ ans.5 = (c = 2.151\,i + 4.303\,j - 3.586\,k) \\ ans.6 = (d = -1.793\,i - 3.586\,j + 2.988\,k) \end{bmatrix}$$

$$Ans5 = <-12, -12>, \quad , Ans6 = <19, -19>, \quad , Ans7 = <17, 28, 19>, \quad , Ans8 = <38, 13, -13>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{130}, 11.402]] \\ ans.2 = \begin{bmatrix} b = <45, 35> \\ |b| = [5\sqrt{130}, 57.009] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-27, -21> \\ |c| = [3\sqrt{130}, 34.205] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <5, 16> \\ |a| = [2\sqrt{34}, 11.662] \\ |b| = [\sqrt{157}, 12.530] \\ |a + b| = [\sqrt{281}, 16.763] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-17, 4> \\ |a| = [2\sqrt{34}, 11.662] \\ |b| = [\sqrt{157}, 12.530] \\ |a - b| = [\sqrt{305}, 17.464] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-7, 3, -3> \\ |a| = [\sqrt{233}, 15.264] \\ |b| = [\sqrt{114}, 10.677] \\ |a + b| = [\sqrt{67}, 8.185] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <-17, -13, -13> \\ |a| = [\sqrt{233}, 15.264] \\ |b| = [\sqrt{114}, 10.677] \\ |a - b| = [\sqrt{627}, 25.040] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 49.399\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{145}, 12.042]) \\ ans.3 = (\theta = 318.366\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.9252

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -7 , 3 >) \\ ans.3 = (AB = -7\,i + 3\,j) \\ ans.4 = (|AB| = (\sqrt{58}, 7.616)) \\ ans.5 = (u = -0.919\,i + 0.394\,j) \\ ans.6 = (c = -5.515\,i + 2.364\,j) \\ ans.7 = (d = 7.353\,i - 3.151\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 15 , 5 >) \\ ans.3 = (AB = 15\,i + 5\,j) \\ ans.4 = (|AB| = (5\sqrt{10}, 15.811)) \\ ans.5 = (u = 0.949\,i + 0.316\,j) \\ ans.6 = (c = 5.692\,i + 1.897\,j) \\ ans.7 = (d = -7.589\,i - 2.530\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 5 , -10 , 3 >) \\ ans.2 = (AB = 5\,i - 10\,j + 3\,k) \\ ans.3 = (|AB| = (\sqrt{134}, 11.576)) \\ ans.4 = (u = 0.432\,i - 0.864\,j + 0.259\,k) \\ ans.5 = (c = 2.592\,i - 5.183\,j + 1.555\,k) \\ ans.6 = (d = -2.160\,i + 4.319\,j - 1.296\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -12 , 7 , -19 >) \\ ans.2 = (AB = -12\,i + 7\,j - 19\,k) \\ ans.3 = (|AB| = (\sqrt{554}, 23.537)) \\ ans.4 = (u = -0.510\,i + 0.297\,j - 0.807\,k) \\ ans.5 = (c = -3.569\,i + 2.082\,j - 5.651\,k) \\ ans.6 = (d = 4.079\,i - 2.379\,j + 6.458\,k) \end{bmatrix}$$

$$Ans5 = < -4 , 4 >, \quad , Ans6 = < 57 , 42 >, \quad , Ans7 = < -35 , 32 , -15 >, \quad , Ans8 = < -13 , -30 , -18 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{85}, 9.220]] \\ ans.2 = \begin{bmatrix} b = < -36 , 42 > \\ |b| = [6\sqrt{85}, 55.317] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 24 , -28 > \\ |c| = [4\sqrt{85}, 36.878] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 6 , 20 > \\ |a| = [\sqrt{74}, 8.602] \\ |b| = [\sqrt{290}, 17.029] \\ |a + b| = [2\sqrt{109}, 20.881] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -16 , -6 > \\ |a| = [\sqrt{74}, 8.602] \\ |b| = [\sqrt{290}, 17.029] \\ |a - b| = [2\sqrt{73}, 17.088] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 0 , 1 , -20 > \\ |a| = [\sqrt{179}, 13.379] \\ |b| = [\sqrt{286}, 16.912] \\ |a + b| = [\sqrt{401}, 20.025] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -18 , 13 , 6 > \\ |a| = [\sqrt{179}, 13.379] \\ |b| = [\sqrt{286}, 16.912] \\ |a - b| = [23, 23.000] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{145}, 12.042]) \\ ans.3 = (\theta = 41.634\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 209.055\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.9312

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -7 , 6 >) \\ ans.3 = (AB = -7\,i + 6\,j) \\ ans.4 = (|AB| = (\sqrt{85}, 9.220)) \\ ans.5 = (u = -0.759\,i + 0.651\,j) \\ ans.6 = (c = -3.796\,i + 3.254\,j) \\ ans.7 = (d = 4.556\,i - 3.905\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -11 , -5 >) \\ ans.3 = (AB = -11\,i - 5\,j) \\ ans.4 = (|AB| = (\sqrt{146}, 12.083)) \\ ans.5 = (u = -0.910\,i - 0.414\,j) \\ ans.6 = (c = -5.462\,i - 2.483\,j) \\ ans.7 = (d = 7.283\,i + 3.310\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 3 , -8 , 7 >) \\ ans.2 = (AB = 3\,i - 8\,j + 7\,k) \\ ans.3 = (|AB| = (\sqrt{122}, 11.045)) \\ ans.4 = (u = 0.272\,i - 0.724\,j + 0.634\,k) \\ ans.5 = (c = 2.444\,i - 6.519\,j + 5.704\,k) \\ ans.6 = (d = -1.630\,i + 4.346\,j - 3.803\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -6 , 9 , 6 >) \\ ans.2 = (AB = -6\,i + 9\,j + 6\,k) \\ ans.3 = (|AB| = (3\sqrt{17}, 12.369)) \\ ans.4 = (u = -0.485\,i + 0.728\,j + 0.485\,k) \\ ans.5 = (c = -3.881\,i + 5.821\,j + 3.881\,k) \\ ans.6 = (d = 3.395\,i - 5.093\,j - 3.395\,k) \end{bmatrix}$$

$$Ans5 = < 5 , -19 >, \quad , Ans6 = < 23 , 15 >, \quad , Ans7 = < -21 , 29 , -15 >, \quad , Ans8 = < 7 , -10 , -25 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{61}, 7.810]] \\ ans.2 = \begin{bmatrix} b = < 35 , 42 > \\ |b| = [7\sqrt{61}, 54.672] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -30 , -36 > \\ |c| = [6\sqrt{61}, 46.861] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 4 , 19 > \\ |a| = [\sqrt{202}, 14.213] \\ |b| = [\sqrt{149}, 12.207] \\ |a + b| = [\sqrt{377}, 19.416] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 18 , -1 > \\ |a| = [\sqrt{202}, 14.213] \\ |b| = [\sqrt{149}, 12.207] \\ |a - b| = [5\sqrt{13}, 18.028] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -7 , 20 , 6 > \\ |a| = [\sqrt{257}, 16.031] \\ |b| = [13\sqrt{2}, 18.385] \\ |a + b| = [\sqrt{485}, 22.023] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -17 , -4 , -20 > \\ |a| = [\sqrt{257}, 16.031] \\ |b| = [13\sqrt{2}, 18.385] \\ |a - b| = [\sqrt{705}, 26.552] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 52.125\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{145}, 12.042]) \\ ans.3 = (\theta = 318.366\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.9397

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -4 , 3 >) \\ ans.3 = (AB = -4\,i + 3\,j) \\ ans.4 = (|AB| = (5, 5.000)) \\ ans.5 = (u = -0.800\,i + 0.600\,j) \\ ans.6 = (c = -4.000\,i + 3.000\,j) \\ ans.7 = (d = 4.800\,i - 3.600\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -4 , -10 >) \\ ans.3 = (AB = -4\,i - 10\,j) \\ ans.4 = (|AB| = (2\sqrt{29}, 10.770)) \\ ans.5 = (u = -0.371\,i - 0.928\,j) \\ ans.6 = (c = -3.343\,i - 8.356\,j) \\ ans.7 = (d = 2.228\,i + 5.571\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -9 , 4 , -3 >) \\ ans.2 = (AB = -9\,i + 4\,j - 3\,k) \\ ans.3 = (|AB| = (\sqrt{106}, 10.296)) \\ ans.4 = (u = -0.874\,i + 0.389\,j - 0.291\,k) \\ ans.5 = (c = -6.993\,i + 3.108\,j - 2.331\,k) \\ ans.6 = (d = 6.119\,i - 2.720\,j + 2.040\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 8 , -9 , 10 >) \\ ans.2 = (AB = 8\,i - 9\,j + 10\,k) \\ ans.3 = (|AB| = (7\sqrt{5}, 15.652)) \\ ans.4 = (u = 0.511\,i - 0.575\,j + 0.639\,k) \\ ans.5 = (c = 3.578\,i - 4.025\,j + 4.472\,k) \\ ans.6 = (d = -3.067\,i + 3.450\,j - 3.833\,k) \end{bmatrix}$$

$$Ans5 = < -4 , -11 >, \quad , Ans6 = < 19 , 47 >, \quad , Ans7 = < 24 , 8 , -24 >, \quad , Ans8 = < -14 , -12 , 25 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{106}, 10.296]] \\ ans.2 = \begin{bmatrix} b = < 45 , -25 > \\ |b| = [5\sqrt{106}, 51.478] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -27 , 15 > \\ |c| = [3\sqrt{106}, 30.887] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 7 , 12 > \\ |a| = [\sqrt{85}, 9.220] \\ |b| = [\sqrt{194}, 13.928] \\ |a + b| = [\sqrt{193}, 13.892] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -19 , 2 > \\ |a| = [\sqrt{85}, 9.220] \\ |b| = [\sqrt{194}, 13.928] \\ |a - b| = [\sqrt{365}, 19.105] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 5 , -1 , -18 > \\ |a| = [\sqrt{326}, 18.055] \\ |b| = [\sqrt{86}, 9.274] \\ |a + b| = [5\sqrt{14}, 18.708] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 17 , -11 , -8 > \\ |a| = [\sqrt{326}, 18.055] \\ |b| = [\sqrt{86}, 9.274] \\ |a - b| = [\sqrt{474}, 21.772] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 40.601 \text{ degrees}) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{145}, 12.042]) \\ ans.3 = (\theta = 318.366 \text{ degrees}) \end{bmatrix}$$

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Tutorial01 Answers for No.9449

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <4, -3>) \\ ans.3 = (AB = 4\,i - 3\,j) \\ ans.4 = (|AB| = (5, 5.000)) \\ ans.5 = (u = 0.800\,i - 0.600\,j) \\ ans.6 = (c = 7.200\,i - 5.400\,j) \\ ans.7 = (d = -4.000\,i + 3.000\,j) \end{bmatrix}, \quad Ans2 = \begin{bmatrix} ans.2 = (AB = <11, 4>) \\ ans.3 = (AB = 11\,i + 4\,j) \\ ans.4 = (|AB| = (\sqrt{137}, 11.705)) \\ ans.5 = (u = 0.940\,i + 0.342\,j) \\ ans.6 = (c = 6.579\,i + 2.392\,j) \\ ans.7 = (d = -7.518\,i - 2.734\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-3, 6, -3>) \\ ans.2 = (AB = -3\,i + 6\,j - 3\,k) \\ ans.3 = (|AB| = (3\sqrt{6}, 7.348)) \\ ans.4 = (u = -0.408\,i + 0.816\,j - 0.408\,k) \\ ans.5 = (c = -3.674\,i + 7.348\,j - 3.674\,k) \\ ans.6 = (d = 3.266\,i - 6.532\,j + 3.266\,k) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} ans.1 = (AB = <-6, 9, -4>) \\ ans.2 = (AB = -6\,i + 9\,j - 4\,k) \\ ans.3 = (|AB| = (\sqrt{133}, 11.533)) \\ ans.4 = (u = -0.520\,i + 0.780\,j - 0.347\,k) \\ ans.5 = (c = -3.642\,i + 5.463\,j - 2.428\,k) \\ ans.6 = (d = 2.601\,i - 3.902\,j + 1.734\,k) \end{bmatrix}$$

$$Ans5 = <12, -36>, \quad Ans6 = <-20, -13>, \quad Ans7 = <-9, -27, 22>, \quad Ans8 = <-40, 42, -49>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{145}, 12.042]] \\ ans.2 = \begin{bmatrix} b = <-24, 27> \\ |b| = [3\sqrt{145}, 36.125] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <48, -54> \\ |c| = [6\sqrt{145}, 72.250] \end{bmatrix} \end{bmatrix}, \quad Ans10 = \begin{bmatrix} a + b = <6, 17> \\ |a| = [\sqrt{106}, 10.296] \\ |b| = [\sqrt{185}, 13.601] \\ |a + b| = [5\sqrt{13}, 18.028] \end{bmatrix}, \quad Ans11 = \begin{bmatrix} a - b = <-16, 1> \\ |a| = [\sqrt{106}, 10.296] \\ |b| = [\sqrt{185}, 13.601] \\ |a - b| = [\sqrt{257}, 16.031] \end{bmatrix}, \quad \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <1, -19, 7> \\ |a| = [\sqrt{362}, 19.026] \\ |b| = [5\sqrt{5}, 11.180] \\ |a + b| = [\sqrt{411}, 20.273] \end{bmatrix}, \quad Ans13 = \begin{bmatrix} a - b = <-15, -7, 17> \\ |a| = [\sqrt{362}, 19.026] \\ |b| = [5\sqrt{5}, 11.180] \\ |a - b| = [\sqrt{563}, 23.728] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 57.995\ degrees) \end{bmatrix}, \quad Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 127.875\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.9562

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -5 , -3 >) \\ ans.3 = (AB = -5\ i - 3\ j) \\ ans.4 = (|AB| = (\sqrt{34}, 5.831)) \\ ans.5 = (u = -0.857\ i - 0.514\ j) \\ ans.6 = (c = -6.002\ i - 3.601\ j) \\ ans.7 = (d = 5.145\ i + 3.087\ j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -12 , 6 >) \\ ans.3 = (AB = -12\ i + 6\ j) \\ ans.4 = (|AB| = (6\sqrt{5}, 13.416)) \\ ans.5 = (u = -0.894\ i + 0.447\ j) \\ ans.6 = (c = -8.050\ i + 4.025\ j) \\ ans.7 = (d = 5.367\ i - 2.683\ j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -3 , 4 , 3 >) \\ ans.2 = (AB = -3\ i + 4\ j + 3\ k) \\ ans.3 = (|AB| = (\sqrt{34}, 5.831)) \\ ans.4 = (u = -0.514\ i + 0.686\ j + 0.514\ k) \\ ans.5 = (c = -3.087\ i + 4.116\ j + 3.087\ k) \\ ans.6 = (d = 4.630\ i - 6.174\ j - 4.630\ k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 4 , 8 , 15 >) \\ ans.2 = (AB = 4\ i + 8\ j + 15\ k) \\ ans.3 = (|AB| = (\sqrt{305}, 17.464)) \\ ans.4 = (u = 0.229\ i + 0.458\ j + 0.859\ k) \\ ans.5 = (c = 1.374\ i + 2.748\ j + 5.153\ k) \\ ans.6 = (d = -1.832\ i - 3.665\ j - 6.871\ k) \end{bmatrix}$$

$$Ans5 = < -47 , -11 >, \quad , Ans6 = < 10 , -38 >, \quad , Ans7 = < -41 , -32 , -27 >, \quad , Ans8 = < 6 , 23 , -31 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{130}, 11.402]] \\ ans.2 = \begin{bmatrix} b = < -45 , -35 > \\ |b| = [5\sqrt{130}, 57.009] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 63 , 49 > \\ |c| = [7\sqrt{130}, 79.812] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 4 , 20 > \\ |a| = [5\sqrt{10}, 15.811] \\ |b| = [\sqrt{74}, 8.602] \\ |a + b| = [4\sqrt{26}, 20.396] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 14 , 6 > \\ |a| = [5\sqrt{10}, 15.811] \\ |b| = [\sqrt{74}, 8.602] \\ |a - b| = [2\sqrt{58}, 15.232] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 2 , 14 , 19 > \\ |a| = [\sqrt{206}, 14.353] \\ |b| = [17, 17.000] \\ |a + b| = [\sqrt{561}, 23.685] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 20 , -2 , -5 > \\ |a| = [\sqrt{206}, 14.353] \\ |b| = [17, 17.000] \\ |a - b| = [\sqrt{429}, 20.712] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 50.194\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{145}, 12.042]) \\ ans.3 = (\theta = 221.634\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.9721

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <-3, -4>) \\ ans.3 = (AB = -3\,i - 4\,j) \\ ans.4 = (|AB| = (5, 5.000)) \\ ans.5 = (u = -0.600\,i - 0.800\,j) \\ ans.6 = (c = -4.800\,i - 6.400\,j) \\ ans.7 = (d = 3.600\,i + 4.800\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <6, -13>) \\ ans.3 = (AB = 6\,i - 13\,j) \\ ans.4 = (|AB| = (\sqrt{205}, 14.318)) \\ ans.5 = (u = 0.419\,i - 0.908\,j) \\ ans.6 = (c = 3.352\,i - 7.264\,j) \\ ans.7 = (d = -2.514\,i + 5.448\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-8, -3, 4>) \\ ans.2 = (AB = -8\,i - 3\,j + 4\,k) \\ ans.3 = (|AB| = (\sqrt{89}, 9.434)) \\ ans.4 = (u = -0.848\,i - 0.318\,j + 0.424\,k) \\ ans.5 = (c = -6.784\,i - 2.544\,j + 3.392\,k) \\ ans.6 = (d = 4.240\,i + 1.590\,j - 2.120\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-14, -11, -8>) \\ ans.2 = (AB = -14\,i - 11\,j - 8\,k) \\ ans.3 = (|AB| = (\sqrt{381}, 19.519)) \\ ans.4 = (u = -0.717\,i - 0.564\,j - 0.410\,k) \\ ans.5 = (c = -5.738\,i - 4.508\,j - 3.279\,k) \\ ans.6 = (d = 6.455\,i + 5.072\,j + 3.689\,k) \end{bmatrix}$$

$$Ans5 = <-17, 29>, \quad , Ans6 = <8, 33>, \quad , Ans7 = <23, -16, 31>, \quad , Ans8 = <-18, 11, 18>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{145}, 12.042]] \\ ans.2 = \begin{bmatrix} b = <27, 24> \\ |b| = [3\sqrt{145}, 36.125] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-63, -56> \\ |c| = [7\sqrt{145}, 84.291] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <-5, 18> \\ |a| = [\sqrt{149}, 12.207] \\ |b| = [\sqrt{146}, 12.083] \\ |a + b| = [\sqrt{349}, 18.682] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-15, -4> \\ |a| = [\sqrt{149}, 12.207] \\ |b| = [\sqrt{146}, 12.083] \\ |a - b| = [\sqrt{241}, 15.524] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-5, -20, -13> \\ |a| = [\sqrt{110}, 10.488] \\ |b| = [\sqrt{354}, 18.815] \\ |a + b| = [3\sqrt{66}, 24.372] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <17, 6, 3> \\ |a| = [\sqrt{110}, 10.488] \\ |b| = [\sqrt{354}, 18.815] \\ |a - b| = [\sqrt{334}, 18.276] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 60.945\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{145}, 12.042]) \\ ans.3 = (\theta = 318.366\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.9789

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -4 , 4 >) \\ ans.3 = (AB = -4\, i + 4\, j) \\ ans.4 = (\left|AB\right| = (4\sqrt{2}, 5.657)) \\ ans.5 = (u = -0.707\, i + 0.707\, j) \\ ans.6 = (c = -3.536\, i + 3.536\, j) \\ ans.7 = (d = 4.243\, i - 4.243\, j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -4 , -10 >) \\ ans.3 = (AB = -4\, i - 10\, j) \\ ans.4 = (\left|AB\right| = (2\sqrt{29}, 10.770)) \\ ans.5 = (u = -0.371\, i - 0.928\, j) \\ ans.6 = (c = -1.857\, i - 4.642\, j) \\ ans.7 = (d = 3.343\, i + 8.356\, j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -6 , 6 , 9 >) \\ ans.2 = (AB = -6\, i + 6\, j + 9\, k) \\ ans.3 = (\left|AB\right| = (3\sqrt{17}, 12.369)) \\ ans.4 = (u = -0.485\, i + 0.485\, j + 0.728\, k) \\ ans.5 = (c = -2.910\, i + 2.910\, j + 4.366\, k) \\ ans.6 = (d = 2.425\, i - 2.425\, j - 3.638\, k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -6 , 8 , -10 >) \\ ans.2 = (AB = -6\, i + 8\, j - 10\, k) \\ ans.3 = (\left|AB\right| = (10\sqrt{2}, 14.142)) \\ ans.4 = (u = -0.424\, i + 0.566\, j - 0.707\, k) \\ ans.5 = (c = -2.970\, i + 3.960\, j - 4.950\, k) \\ ans.6 = (d = 3.818\, i - 5.091\, j + 6.364\, k) \end{bmatrix}$$

$$Ans5 = < 20 , 26 >, \quad , Ans6 = < 11 , 8 >, \quad , Ans7 = < -7 , -9 , -13 >, \quad , Ans8 = < 11 , -2 , 15 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [\left|a\right| = [\sqrt{113}, 10.630]] \\ ans.2 = \begin{bmatrix} b = < 48 , -42 > \\ \left|b\right| = [6\sqrt{113}, 63.781] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -24 , 21 > \\ \left|c\right| = [3\sqrt{113}, 31.890] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 18 , -1 > \\ \left|a\right| = [\sqrt{205}, 14.318] \\ \left|b\right| = [\sqrt{74}, 8.602] \\ \left|a + b\right| = [5\sqrt{13}, 18.028] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 8 , 13 > \\ \left|a\right| = [\sqrt{205}, 14.318] \\ \left|b\right| = [\sqrt{74}, 8.602] \\ \left|a - b\right| = [\sqrt{233}, 15.264] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -4 , 12 , -1 > \\ \left|a\right| = [\sqrt{142}, 11.916] \\ \left|b\right| = [3\sqrt{11}, 9.950] \\ \left|a + b\right| = [\sqrt{161}, 12.689] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -14 , -2 , -11 > \\ \left|a\right| = [\sqrt{142}, 11.916] \\ \left|b\right| = [3\sqrt{11}, 9.950] \\ \left|a - b\right| = [\sqrt{321}, 17.916] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (\left|a\right| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 49.399\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (\left|a\right| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 319.399\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.9795

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <5, -4>) \\ ans.3 = (AB = 5\,i - 4\,j) \\ ans.4 = (|AB| = (\sqrt{41}, 6.403)) \\ ans.5 = (u = 0.781\,i - 0.625\,j) \\ ans.6 = (c = 4.685\,i - 3.748\,j) \\ ans.7 = (d = -7.028\,i + 5.622\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <10, -6>) \\ ans.3 = (AB = 10\,i - 6\,j) \\ ans.4 = (|AB| = (2\sqrt{34}, 11.662)) \\ ans.5 = (u = 0.857\,i - 0.514\,j) \\ ans.6 = (c = 6.002\,i - 3.601\,j) \\ ans.7 = (d = -5.145\,i + 3.087\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-4, 5, -4>) \\ ans.2 = (AB = -4\,i + 5\,j - 4\,k) \\ ans.3 = (|AB| = (\sqrt{57}, 7.550)) \\ ans.4 = (u = -0.530\,i + 0.662\,j - 0.530\,k) \\ ans.5 = (c = -4.239\,i + 5.298\,j - 4.239\,k) \\ ans.6 = (d = 3.709\,i - 4.636\,j + 3.709\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-9, 7, -8>) \\ ans.2 = (AB = -9\,i + 7\,j - 8\,k) \\ ans.3 = (|AB| = (\sqrt{194}, 13.928)) \\ ans.4 = (u = -0.646\,i + 0.503\,j - 0.574\,k) \\ ans.5 = (c = -5.815\,i + 4.523\,j - 5.169\,k) \\ ans.6 = (d = 3.877\,i - 3.015\,j + 3.446\,k) \end{bmatrix}$$

$$Ans5 = <12, -44>, \quad , Ans6 = <10, 2>, \quad , Ans7 = <4, 0, -3>, \quad , Ans8 = <-28, -4, 15>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{106}, 10.296]] \\ ans.2 = \begin{bmatrix} b = <45, 25> \\ |b| = [5\sqrt{106}, 51.478] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-63, -35> \\ |c| = [7\sqrt{106}, 72.069] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <-6, 18> \\ |a| = [\sqrt{61}, 7.810] \\ |b| = [\sqrt{313}, 17.692] \\ |a + b| = [6\sqrt{10}, 18.974] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <18, -8> \\ |a| = [\sqrt{61}, 7.810] \\ |b| = [\sqrt{313}, 17.692] \\ |a - b| = [2\sqrt{97}, 19.698] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <3, -6, 19> \\ |a| = [\sqrt{354}, 18.815] \\ |b| = [\sqrt{86}, 9.274] \\ |a + b| = [\sqrt{406}, 20.149] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <13, -16, 7> \\ |a| = [\sqrt{354}, 18.815] \\ |b| = [\sqrt{86}, 9.274] \\ |a - b| = [\sqrt{474}, 21.772] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 52.125\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 318.814\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.9839

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <6, -7>) \\ ans.3 = (AB = 6\,i - 7\,j) \\ ans.4 = (|AB| = (\sqrt{85}, 9.220)) \\ ans.5 = (u = 0.651\,i - 0.759\,j) \\ ans.6 = (c = 5.857\,i - 6.833\,j) \\ ans.7 = (d = -4.556\,i + 5.315\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <8, 5>) \\ ans.3 = (AB = 8\,i + 5\,j) \\ ans.4 = (|AB| = (\sqrt{89}, 9.434)) \\ ans.5 = (u = 0.848\,i + 0.530\,j) \\ ans.6 = (c = 5.936\,i + 3.710\,j) \\ ans.7 = (d = -6.784\,i - 4.240\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-5, -8, 3>) \\ ans.2 = (AB = -5\,i - 8\,j + 3\,k) \\ ans.3 = (|AB| = (7\sqrt{2}, 9.899)) \\ ans.4 = (u = -0.505\,i - 0.808\,j + 0.303\,k) \\ ans.5 = (c = -4.546\,i - 7.273\,j + 2.727\,k) \\ ans.6 = (d = 2.525\,i + 4.041\,j - 1.515\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-6, -6, -6>) \\ ans.2 = (AB = -6\,i - 6\,j - 6\,k) \\ ans.3 = (|AB| = (6\sqrt{3}, 10.392)) \\ ans.4 = (u = -0.577\,i - 0.577\,j - 0.577\,k) \\ ans.5 = (c = -3.464\,i - 3.464\,j - 3.464\,k) \\ ans.6 = (d = 5.196\,i + 5.196\,j + 5.196\,k) \end{bmatrix}$$

$$Ans5 = <-11, -26>, \quad , Ans6 = <12, -29>, \quad , Ans7 = <25, -11, -19>, \quad , Ans8 = <19, -22, 41>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{145}, 12.042]] \\ ans.2 = \begin{bmatrix} b = <36, -32> \\ |b| = [4\sqrt{145}, 48.166] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-45, 40> \\ |c| = [5\sqrt{145}, 60.208] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <-4, 15> \\ |a| = [\sqrt{85}, 9.220] \\ |b| = [\sqrt{202}, 14.213] \\ |a + b| = [\sqrt{241}, 15.524] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <18, -3> \\ |a| = [\sqrt{85}, 9.220] \\ |b| = [\sqrt{202}, 14.213] \\ |a - b| = [3\sqrt{37}, 18.248] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-2, -19, -4> \\ |a| = [\sqrt{230}, 15.166] \\ |b| = [\sqrt{285}, 16.882] \\ |a + b| = [\sqrt{381}, 19.519] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <-18, 1, 18> \\ |a| = [\sqrt{230}, 15.166] \\ |b| = [\sqrt{285}, 16.882] \\ |a - b| = [\sqrt{649}, 25.475] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 49.399\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 217.875\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.9843

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < 4 , 5 >) \\ ans.3 = (AB = 4\,i + 5\,j) \\ ans.4 = (|AB| = (\sqrt{41}, 6.403)) \\ ans.5 = (u = 0.625\,i + 0.781\,j) \\ ans.6 = (c = 4.373\,i + 5.466\,j) \\ ans.7 = (d = -5.622\,i - 7.028\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -11 , -4 >) \\ ans.3 = (AB = -11\,i - 4\,j) \\ ans.4 = (|AB| = (\sqrt{137}, 11.705)) \\ ans.5 = (u = -0.940\,i - 0.342\,j) \\ ans.6 = (c = -8.458\,i - 3.076\,j) \\ ans.7 = (d = 5.639\,i + 2.050\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -4 , 4 , -7 >) \\ ans.2 = (AB = -4\,i + 4\,j - 7\,k) \\ ans.3 = (|AB| = (9, 9.000)) \\ ans.4 = (u = -0.444\,i + 0.444\,j - 0.778\,k) \\ ans.5 = (c = -2.222\,i + 2.222\,j - 3.889\,k) \\ ans.6 = (d = 2.667\,i - 2.667\,j + 4.667\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 11 , 9 , -10 >) \\ ans.2 = (AB = 11\,i + 9\,j - 10\,k) \\ ans.3 = (|AB| = (\sqrt{302}, 17.378)) \\ ans.4 = (u = 0.633\,i + 0.518\,j - 0.575\,k) \\ ans.5 = (c = 3.165\,i + 2.589\,j - 2.877\,k) \\ ans.6 = (d = -5.697\,i - 4.661\,j + 5.179\,k) \end{bmatrix}$$

$$Ans5 = < -17 , -23 >, \quad , Ans6 = < 27 , 16 >, \quad , Ans7 = < -15 , 32 , -12 >, \quad , Ans8 = < -33 , 8 , 10 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{61}, 7.810]] \\ ans.2 = \begin{bmatrix} b = < 36 , -30 > \\ |b| = [6\sqrt{61}, 46.861] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -30 , 25 > \\ |c| = [5\sqrt{61}, 39.051] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < -4 , 15 > \\ |a| = [\sqrt{170}, 13.038] \\ |b| = [\sqrt{113}, 10.630] \\ |a + b| = [\sqrt{241}, 15.524] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -18 , -1 > \\ |a| = [\sqrt{170}, 13.038] \\ |b| = [\sqrt{113}, 10.630] \\ |a - b| = [5\sqrt{13}, 18.028] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 16 , -19 , 4 > \\ |a| = [\sqrt{221}, 14.866] \\ |b| = [13\sqrt{2}, 18.385] \\ |a + b| = [\sqrt{633}, 25.159] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 6 , 7 , -20 > \\ |a| = [\sqrt{221}, 14.866] \\ |b| = [13\sqrt{2}, 18.385] \\ |a - b| = [\sqrt{485}, 22.023] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 52.125 \text{ degrees}) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 307.875 \text{ degrees}) \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -3 , 7 >) \\ ans.3 = (AB = -3\, i + 7\, j) \\ ans.4 = (|AB| = (\sqrt{58}, 7.616)) \\ ans.5 = (u = -0.394\, i + 0.919\, j) \\ ans.6 = (c = -2.364\, i + 5.515\, j) \\ ans.7 = (d = 1.970\, i - 4.596\, j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -12 , 4 >) \\ ans.3 = (AB = -12\, i + 4\, j) \\ ans.4 = (|AB| = (4\sqrt{10}, 12.649)) \\ ans.5 = (u = -0.949\, i + 0.316\, j) \\ ans.6 = (c = -7.589\, i + 2.530\, j) \\ ans.7 = (d = 5.692\, i - 1.897\, j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -4 , 4 , 7 >) \\ ans.2 = (AB = -4\, i + 4\, j + 7\, k) \\ ans.3 = (|AB| = (9, 9.000)) \\ ans.4 = (u = -0.444\, i + 0.444\, j + 0.778\, k) \\ ans.5 = (c = -4.000\, i + 4.000\, j + 7.000\, k) \\ ans.6 = (d = 3.111\, i - 3.111\, j - 5.444\, k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 4 , -15 , 7 >) \\ ans.2 = (AB = 4\, i - 15\, j + 7\, k) \\ ans.3 = (|AB| = (\sqrt{290}, 17.029)) \\ ans.4 = (u = 0.235\, i - 0.881\, j + 0.411\, k) \\ ans.5 = (c = 1.879\, i - 7.047\, j + 3.288\, k) \\ ans.6 = (d = -1.644\, i + 6.166\, j - 2.877\, k) \end{bmatrix}$$

$$Ans5 = < -40 , -22 >, \quad , Ans6 = < -31 , -21 >, \quad , Ans7 = < 20 , -9 , -6 >, \quad , Ans8 = < -40 , -11 , 32 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{89}, 9.434]] \\ ans.2 = \begin{bmatrix} b = < -20 , 32 > \\ |b| = [4\sqrt{89}, 37.736] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 25 , -40 > \\ |c| = [5\sqrt{89}, 47.170] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < -2 , 20 > \\ |a| = [\sqrt{170}, 13.038] \\ |b| = [\sqrt{106}, 10.296] \\ |a + b| = [2\sqrt{101}, 20.100] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -12 , 2 > \\ |a| = [\sqrt{170}, 13.038] \\ |b| = [\sqrt{106}, 10.296] \\ |a - b| = [2\sqrt{37}, 12.166] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -3 , 7 , 18 > \\ |a| = [\sqrt{314}, 17.720] \\ |b| = [2\sqrt{43}, 13.115] \\ |a + b| = [\sqrt{382}, 19.545] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -15 , 19 , -2 > \\ |a| = [\sqrt{314}, 17.720] \\ |b| = [2\sqrt{43}, 13.115] \\ |a - b| = [\sqrt{590}, 24.290] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{74}, 8.602]) \\ ans.3 = (\theta = 35.538\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 330.945\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.9862

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <5, -3>) \\ ans.3 = (AB = 5\,i - 3\,j) \\ ans.4 = (|AB| = (\sqrt{34}, 5.831)) \\ ans.5 = (u = 0.857\,i - 0.514\,j) \\ ans.6 = (c = 7.717\,i - 4.630\,j) \\ ans.7 = (d = -5.145\,i + 3.087\,j) \end{bmatrix}, \quad Ans2 = \begin{bmatrix} ans.2 = (AB = <-5, 7>) \\ ans.3 = (AB = -5\,i + 7\,j) \\ ans.4 = (|AB| = (\sqrt{74}, 8.602)) \\ ans.5 = (u = -0.581\,i + 0.814\,j) \\ ans.6 = (c = -3.487\,i + 4.882\,j) \\ ans.7 = (d = 4.069\,i - 5.696\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <5, 9, 3>) \\ ans.2 = (AB = 5\,i + 9\,j + 3\,k) \\ ans.3 = (|AB| = (\sqrt{115}, 10.724)) \\ ans.4 = (u = 0.466\,i + 0.839\,j + 0.280\,k) \\ ans.5 = (c = 2.798\,i + 5.036\,j + 1.679\,k) \\ ans.6 = (d = -4.196\,i - 7.553\,j - 2.518\,k) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} ans.1 = (AB = <-15, -5, 11>) \\ ans.2 = (AB = -15\,i - 5\,j + 11\,k) \\ ans.3 = (|AB| = (\sqrt{371}, 19.261)) \\ ans.4 = (u = -0.779\,i - 0.260\,j + 0.571\,k) \\ ans.5 = (c = -7.009\,i - 2.336\,j + 5.140\,k) \\ ans.6 = (d = 5.451\,i + 1.817\,j - 3.998\,k) \end{bmatrix}$$

$$Ans5 = <-14, -22>, \quad Ans6 = <-4, 8>, \quad Ans7 = <-5, 26, 2>, \quad Ans8 = <30, 24, -22>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{145}, 12.042]] \\ ans.2 = \begin{bmatrix} b = <-54, -48> \\ |b| = [6\sqrt{145}, 72.250] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <36, 32> \\ |c| = [4\sqrt{145}, 48.166] \end{bmatrix} \end{bmatrix}, \quad Ans10 = \begin{bmatrix} a + b = <20, -3> \\ |a| = [\sqrt{74}, 8.602] \\ |b| = [\sqrt{233}, 15.264] \\ |a + b| = [\sqrt{409}, 20.224] \end{bmatrix}, \quad Ans11 = \begin{bmatrix} a - b = <-6, 13> \\ |a| = [\sqrt{74}, 8.602] \\ |b| = [\sqrt{233}, 15.264] \\ |a - b| = [\sqrt{205}, 14.318] \end{bmatrix}, \quad \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <13, -12, 5> \\ |a| = [3\sqrt{21}, 13.748] \\ |b| = [3\sqrt{11}, 9.950] \\ |a + b| = [13\sqrt{2}, 18.385] \end{bmatrix}, \quad Ans13 = \begin{bmatrix} a - b = <3, 2, 15> \\ |a| = [3\sqrt{21}, 13.748] \\ |b| = [3\sqrt{11}, 9.950] \\ |a - b| = [\sqrt{238}, 15.427] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 48.814\ degrees) \end{bmatrix}, \quad Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 140.194\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.10278

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <-5, 7>) \\ ans.3 = (AB = -5\,i + 7\,j) \\ ans.4 = (|AB| = (\sqrt{74}, 8.602)) \\ ans.5 = (u = -0.581\,i + 0.814\,j) \\ ans.6 = (c = -2.906\,i + 4.069\,j) \\ ans.7 = (d = 4.650\,i - 6.510\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <13, 6>) \\ ans.3 = (AB = 13\,i + 6\,j) \\ ans.4 = (|AB| = (\sqrt{205}, 14.318)) \\ ans.5 = (u = 0.908\,i + 0.419\,j) \\ ans.6 = (c = 6.356\,i + 2.933\,j) \\ ans.7 = (d = -8.172\,i - 3.772\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <6, -5, -5>) \\ ans.2 = (AB = 6\,i - 5\,j - 5\,k) \\ ans.3 = (|AB| = (\sqrt{86}, 9.274)) \\ ans.4 = (u = 0.647\,i - 0.539\,j - 0.539\,k) \\ ans.5 = (c = 4.529\,i - 3.774\,j - 3.774\,k) \\ ans.6 = (d = -5.823\,i + 4.852\,j + 4.852\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-3, -3, 12>) \\ ans.2 = (AB = -3\,i - 3\,j + 12\,k) \\ ans.3 = (|AB| = (9\sqrt{2}, 12.728)) \\ ans.4 = (u = -0.236\,i - 0.236\,j + 0.943\,k) \\ ans.5 = (c = -2.121\,i - 2.121\,j + 8.485\,k) \\ ans.6 = (d = 1.179\,i + 1.179\,j - 4.714\,k) \end{bmatrix}$$

$$Ans5 = <10, 4>, \quad , Ans6 = <-16, 20>, \quad , Ans7 = <-12, 14, -24>, \quad , Ans8 = <29, 24, 50>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{113}, 10.630]] \\ ans.2 = \begin{bmatrix} b = <-40, 35> \\ |b| = [5\sqrt{113}, 53.151] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <32, -28> \\ |c| = [4\sqrt{113}, 42.521] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <16, 1> \\ |a| = [\sqrt{170}, 13.038] \\ |b| = [\sqrt{89}, 9.434] \\ |a + b| = [\sqrt{257}, 16.031] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <6, -15> \\ |a| = [\sqrt{170}, 13.038] \\ |b| = [\sqrt{89}, 9.434] \\ |a - b| = [3\sqrt{29}, 16.155] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <19, 0, 19> \\ |a| = [3\sqrt{30}, 16.432] \\ |b| = [2\sqrt{77}, 17.550] \\ |a + b| = [19\sqrt{2}, 26.870] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <-5, 20, 3> \\ |a| = [3\sqrt{30}, 16.432] \\ |b| = [2\sqrt{77}, 17.550] \\ |a - b| = [\sqrt{434}, 20.833] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 49.399\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 122.005\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.10361

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < 6 , 3 >) \\ ans.3 = (AB = 6\,i + 3\,j) \\ ans.4 = (|AB| = (3\sqrt{5}, 6.708)) \\ ans.5 = (u = 0.894\,i + 0.447\,j) \\ ans.6 = (c = 7.155\,i + 3.578\,j) \\ ans.7 = (d = -5.367\,i - 2.683\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -7 , 7 >) \\ ans.3 = (AB = -7\,i + 7\,j) \\ ans.4 = (|AB| = (7\sqrt{2}, 9.899)) \\ ans.5 = (u = -0.707\,i + 0.707\,j) \\ ans.6 = (c = -6.364\,i + 6.364\,j) \\ ans.7 = (d = 5.657\,i - 5.657\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -3 , 4 , 4 >) \\ ans.2 = (AB = -3\,i + 4\,j + 4\,k) \\ ans.3 = (|AB| = (\sqrt{41}, 6.403)) \\ ans.4 = (u = -0.469\,i + 0.625\,j + 0.625\,k) \\ ans.5 = (c = -4.217\,i + 5.622\,j + 5.622\,k) \\ ans.6 = (d = 2.811\,i - 3.748\,j - 3.748\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 7 , -6 , 3 >) \\ ans.2 = (AB = 7\,i - 6\,j + 3\,k) \\ ans.3 = (|AB| = (\sqrt{94}, 9.695)) \\ ans.4 = (u = 0.722\,i - 0.619\,j + 0.309\,k) \\ ans.5 = (c = 5.054\,i - 4.332\,j + 2.166\,k) \\ ans.6 = (d = -6.498\,i + 5.570\,j - 2.785\,k) \end{bmatrix}$$

$$Ans5 = < -28 , 30 >, \quad , Ans6 = < 54 , 32 >, \quad , Ans7 = < 29 , 30 , 31 >, \quad , Ans8 = < 3 , 15 , 19 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{74}, 8.602]] \\ ans.2 = \begin{bmatrix} b = < 35 , -49 > \\ |b| = [7\sqrt{74}, 60.216] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -30 , 42 > \\ |c| = [6\sqrt{74}, 51.614] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < -4 , 16 > \\ |a| = [3\sqrt{13}, 10.817] \\ |b| = [\sqrt{149}, 12.207] \\ |a + b| = [4\sqrt{17}, 16.492] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 16 , 2 > \\ |a| = [3\sqrt{13}, 10.817] \\ |b| = [\sqrt{149}, 12.207] \\ |a - b| = [2\sqrt{65}, 16.125] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 6 , 4 , 19 > \\ |a| = [\sqrt{185}, 13.601] \\ |b| = [5\sqrt{14}, 18.708] \\ |a + b| = [\sqrt{413}, 20.322] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -20 , -16 , 1 > \\ |a| = [\sqrt{185}, 13.601] \\ |b| = [5\sqrt{14}, 18.708] \\ |a - b| = [3\sqrt{73}, 25.632] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{74}, 8.602]) \\ ans.3 = (\theta = 54.462\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 209.055\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.10532

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -7 , 3 >) \\ ans.3 = (AB = -7\,i + 3\,j) \\ ans.4 = (|AB| = (\sqrt{58}, 7.616)) \\ ans.5 = (u = -0.919\,i + 0.394\,j) \\ ans.6 = (c = -4.596\,i + 1.970\,j) \\ ans.7 = (d = 5.515\,i - 2.364\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -10 , -3 >) \\ ans.3 = (AB = -10\,i - 3\,j) \\ ans.4 = (|AB| = (\sqrt{109}, 10.440)) \\ ans.5 = (u = -0.958\,i - 0.287\,j) \\ ans.6 = (c = -7.663\,i - 2.299\,j) \\ ans.7 = (d = 4.789\,i + 1.437\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -7 , 4 , -4 >) \\ ans.2 = (AB = -7\,i + 4\,j - 4\,k) \\ ans.3 = (|AB| = (9, 9.000)) \\ ans.4 = (u = -0.778\,i + 0.444\,j - 0.444\,k) \\ ans.5 = (c = -6.222\,i + 3.556\,j - 3.556\,k) \\ ans.6 = (d = 7.000\,i - 4.000\,j + 4.000\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -6 , -5 , 19 >) \\ ans.2 = (AB = -6\,i - 5\,j + 19\,k) \\ ans.3 = (|AB| = (\sqrt{422}, 20.543)) \\ ans.4 = (u = -0.292\,i - 0.243\,j + 0.925\,k) \\ ans.5 = (c = -2.045\,i - 1.704\,j + 6.474\,k) \\ ans.6 = (d = 2.629\,i + 2.191\,j - 8.324\,k) \end{bmatrix}$$

$$Ans5 = < -2 , 11 >, \quad , Ans6 = < 36 , -39 >, \quad , Ans7 = < -8 , -26 , -18 >, \quad , Ans8 = < -17 , 11 , -2 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{89}, 9.434]] \\ ans.2 = \begin{bmatrix} b = < 32 , -20 > \\ |b| = [4\sqrt{89}, 37.736] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -24 , 15 > \\ |c| = [3\sqrt{89}, 28.302] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < -3 , 20 > \\ |a| = [\sqrt{74}, 8.602] \\ |b| = [\sqrt{233}, 15.264] \\ |a + b| = [\sqrt{409}, 20.224] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 13 , -6 > \\ |a| = [\sqrt{74}, 8.602] \\ |b| = [\sqrt{233}, 15.264] \\ |a - b| = [\sqrt{205}, 14.318] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 6 , 14 , 19 > \\ |a| = [\sqrt{230}, 15.166] \\ |b| = [\sqrt{221}, 14.866] \\ |a + b| = [\sqrt{593}, 24.352] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -16 , -2 , 7 > \\ |a| = [\sqrt{230}, 15.166] \\ |b| = [\sqrt{221}, 14.866] \\ |a - b| = [\sqrt{309}, 17.578] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 52.125\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 318.814\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.10688

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <-6, 6>) \\ ans.3 = (AB = -6\,i + 6\,j) \\ ans.4 = (|AB| = (6\sqrt{2}, 8.485)) \\ ans.5 = (u = -0.707\,i + 0.707\,j) \\ ans.6 = (c = -5.657\,i + 5.657\,j) \\ ans.7 = (d = 3.536\,i - 3.536\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <9, 4>) \\ ans.3 = (AB = 9\,i + 4\,j) \\ ans.4 = (|AB| = (\sqrt{97}, 9.849)) \\ ans.5 = (u = 0.914\,i + 0.406\,j) \\ ans.6 = (c = 8.224\,i + 3.655\,j) \\ ans.7 = (d = -7.310\,i - 3.249\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <6, -3, 3>) \\ ans.2 = (AB = 6\,i - 3\,j + 3\,k) \\ ans.3 = (|AB| = (3\sqrt{6}, 7.348)) \\ ans.4 = (u = 0.816\,i - 0.408\,j + 0.408\,k) \\ ans.5 = (c = 4.082\,i - 2.041\,j + 2.041\,k) \\ ans.6 = (d = -6.532\,i + 3.266\,j - 3.266\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-13, -7, -3>) \\ ans.2 = (AB = -13\,i - 7\,j - 3\,k) \\ ans.3 = (|AB| = (\sqrt{227}, 15.067)) \\ ans.4 = (u = -0.863\,i - 0.465\,j - 0.199\,k) \\ ans.5 = (c = -5.177\,i - 2.788\,j - 1.195\,k) \\ ans.6 = (d = 6.903\,i + 3.717\,j + 1.593\,k) \end{bmatrix}$$

$$Ans5 = <-25, 5>, \quad , Ans6 = <-2, -14>, \quad , Ans7 = <46, -27, -44>, \quad , Ans8 = <21, -19, -15>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [3\sqrt{13}, 10.817]] \\ ans.2 = \begin{bmatrix} b = <30, -45> \\ |b| = [15\sqrt{13}, 54.083] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-18, 27> \\ |c| = [9\sqrt{13}, 32.450] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <3, 14> \\ |a| = [\sqrt{130}, 11.402] \\ |b| = [5\sqrt{5}, 11.180] \\ |a + b| = [\sqrt{205}, 14.318] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-17, 4> \\ |a| = [\sqrt{130}, 11.402] \\ |b| = [5\sqrt{5}, 11.180] \\ |a - b| = [\sqrt{305}, 17.464] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <13, 7, 15> \\ |a| = [\sqrt{134}, 11.576] \\ |b| = [\sqrt{269}, 16.401] \\ |a + b| = [\sqrt{443}, 21.048] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <1, -19, -1> \\ |a| = [\sqrt{134}, 11.576] \\ |b| = [\sqrt{269}, 16.401] \\ |a - b| = [11\sqrt{3}, 19.053] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 32.005 \text{ degrees}) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 330.945 \text{ degrees}) \end{bmatrix}$$

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Tutorial01 Answers for No.10868

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <7, 8>) \\ ans.3 = (AB = 7\,i + 8\,j) \\ ans.4 = (|AB| = (\sqrt{113}, 10.630)) \\ ans.5 = (u = 0.659\,i + 0.753\,j) \\ ans.6 = (c = 4.610\,i + 5.268\,j) \\ ans.7 = (d = -3.951\,i - 4.515\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <-5, 7>) \\ ans.3 = (AB = -5\,i + 7\,j) \\ ans.4 = (|AB| = (\sqrt{74}, 8.602)) \\ ans.5 = (u = -0.581\,i + 0.814\,j) \\ ans.6 = (c = -5.231\,i + 7.324\,j) \\ ans.7 = (d = 4.069\,i - 5.696\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <3, 8, 6>) \\ ans.2 = (AB = 3\,i + 8\,j + 6\,k) \\ ans.3 = (|AB| = (\sqrt{109}, 10.440)) \\ ans.4 = (u = 0.287\,i + 0.766\,j + 0.575\,k) \\ ans.5 = (c = 2.011\,i + 5.364\,j + 4.023\,k) \\ ans.6 = (d = -2.299\,i - 6.130\,j - 4.598\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <7, -7, -18>) \\ ans.2 = (AB = 7\,i - 7\,j - 18\,k) \\ ans.3 = (|AB| = (\sqrt{422}, 20.543)) \\ ans.4 = (u = 0.341\,i - 0.341\,j - 0.876\,k) \\ ans.5 = (c = 2.726\,i - 2.726\,j - 7.010\,k) \\ ans.6 = (d = -2.385\,i + 2.385\,j + 6.134\,k) \end{bmatrix}$$

$$Ans5 = <44, 37>, \quad , Ans6 = <-14, -13>, \quad , Ans7 = <35, 35, -12>, \quad , Ans8 = <9, -63, 35>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{85}, 9.220]] \\ ans.2 = \begin{bmatrix} b = <28, 24> \\ |b| = [4\sqrt{85}, 36.878] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-21, -18> \\ |c| = [3\sqrt{85}, 27.659] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <15, 7> \\ |a| = [\sqrt{269}, 16.401] \\ |b| = [\sqrt{61}, 7.810] \\ |a + b| = [\sqrt{274}, 16.553] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <5, 19> \\ |a| = [\sqrt{269}, 16.401] \\ |b| = [\sqrt{61}, 7.810] \\ |a - b| = [\sqrt{386}, 19.647] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-14, 17, -20> \\ |a| = [\sqrt{166}, 12.884] \\ |b| = [\sqrt{285}, 16.882] \\ |a + b| = [\sqrt{885}, 29.749] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <2, -3, 2> \\ |a| = [\sqrt{166}, 12.884] \\ |b| = [\sqrt{285}, 16.882] \\ |a - b| = [\sqrt{17}, 4.123] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 49.399\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 318.814\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.10900

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < 3 , 10 >) \\ ans.3 = (AB = 3\,i + 10\,j) \\ ans.4 = (\left|AB\right| = (\sqrt{109}, 10.440)) \\ ans.5 = (u = 0.287\,i + 0.958\,j) \\ ans.6 = (c = 2.586\,i + 8.620\,j) \\ ans.7 = (d = -1.724\,i - 5.747\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -4 , 7 >) \\ ans.3 = (AB = -4\,i + 7\,j) \\ ans.4 = (\left|AB\right| = (\sqrt{65}, 8.062)) \\ ans.5 = (u = -0.496\,i + 0.868\,j) \\ ans.6 = (c = -3.473\,i + 6.078\,j) \\ ans.7 = (d = 2.481\,i - 4.341\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 4 , -10 , 3 >) \\ ans.2 = (AB = 4\,i - 10\,j + 3\,k) \\ ans.3 = (\left|AB\right| = (5\sqrt{5}, 11.180)) \\ ans.4 = (u = 0.358\,i - 0.894\,j + 0.268\,k) \\ ans.5 = (c = 2.504\,i - 6.261\,j + 1.878\,k) \\ ans.6 = (d = -1.789\,i + 4.472\,j - 1.342\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 15 , 6 , 3 >) \\ ans.2 = (AB = 15\,i + 6\,j + 3\,k) \\ ans.3 = (\left|AB\right| = (3\sqrt{30}, 16.432)) \\ ans.4 = (u = 0.913\,i + 0.365\,j + 0.183\,k) \\ ans.5 = (c = 5.477\,i + 2.191\,j + 1.095\,k) \\ ans.6 = (d = -4.564\,i - 1.826\,j - 0.913\,k) \end{bmatrix}$$

$$Ans5 = < 12 , -59 >, \quad , Ans6 = < -3 , 34 >, \quad , Ans7 = < 13 , 11 , 7 >, \quad , Ans8 = < 21 , 5 , 31 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [\left|a\right| = [\sqrt{89}, 9.434]] \\ ans.2 = \begin{bmatrix} b = < -56 , -35 > \\ \left|b\right| = [7\sqrt{89}, 66.038] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 32 , 20 > \\ \left|c\right| = [4\sqrt{89}, 37.736] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 18 , -6 > \\ \left|a\right| = [\sqrt{313}, 17.692] \\ \left|b\right| = [\sqrt{61}, 7.810] \\ \left|a + b\right| = [6\sqrt{10}, 18.974] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 8 , -18 > \\ \left|a\right| = [\sqrt{313}, 17.692] \\ \left|b\right| = [\sqrt{61}, 7.810] \\ \left|a - b\right| = [2\sqrt{97}, 19.698] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 18 , -15 , -20 > \\ \left|a\right| = [\sqrt{314}, 17.720] \\ \left|b\right| = [\sqrt{181}, 13.454] \\ \left|a + b\right| = [\sqrt{949}, 30.806] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 6 , 1 , -2 > \\ \left|a\right| = [\sqrt{314}, 17.720] \\ \left|b\right| = [\sqrt{181}, 13.454] \\ \left|a - b\right| = [\sqrt{41}, 6.403] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (\left|a\right| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 40.601\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (\left|a\right| = [\sqrt{145}, 12.042]) \\ ans.3 = (\theta = 311.634\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.11693

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -4\,,\,-5 >) \\ ans.3 = (AB = -4\,i - 5\,j) \\ ans.4 = (|AB| = (\sqrt{41}\,,\,6.403)) \\ ans.5 = (u = -0.625\,i - 0.781\,j) \\ ans.6 = (c = -4.373\,i - 5.466\,j) \\ ans.7 = (d = 3.748\,i + 4.685\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 4\,,\,-11 >) \\ ans.3 = (AB = 4\,i - 11\,j) \\ ans.4 = (|AB| = (\sqrt{137}\,,\,11.705)) \\ ans.5 = (u = 0.342\,i - 0.940\,j) \\ ans.6 = (c = 1.709\,i - 4.699\,j) \\ ans.7 = (d = -2.734\,i + 7.518\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -9\,,\,4\,,\,7 >) \\ ans.2 = (AB = -9\,i + 4\,j + 7\,k) \\ ans.3 = (|AB| = (\sqrt{146}\,,\,12.083)) \\ ans.4 = (u = -0.745\,i + 0.331\,j + 0.579\,k) \\ ans.5 = (c = -4.469\,i + 1.986\,j + 3.476\,k) \\ ans.6 = (d = 5.959\,i - 2.648\,j - 4.635\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -12\,,\,-7\,,\,-10 >) \\ ans.2 = (AB = -12\,i - 7\,j - 10\,k) \\ ans.3 = (|AB| = (\sqrt{293}\,,\,17.117)) \\ ans.4 = (u = -0.701\,i - 0.409\,j - 0.584\,k) \\ ans.5 = (c = -3.505\,i - 2.045\,j - 2.921\,k) \\ ans.6 = (d = 4.907\,i + 2.863\,j + 4.089\,k) \end{bmatrix}$$

$$Ans5 = < 17\,,\,-8 >, \quad , Ans6 = < 15\,,\,-35 >, \quad , Ans7 = < 12\,,\,37\,,\,-35 >, \quad , Ans8 = < -31\,,\,-9\,,\,-22 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{106}\,,\,10.296]] \\ ans.2 = \begin{bmatrix} b = < 36\,,\,20 > \\ |b| = [4\sqrt{106}\,,\,41.183] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -45\,,\,-25 > \\ |c| = [5\sqrt{106}\,,\,51.478] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 14\,,\,-5 > \\ |a| = [4\sqrt{13}\,,\,14.422] \\ |b| = [\sqrt{85}\,,\,9.220] \\ |a + b| = [\sqrt{221}\,,\,14.866] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 2\,,\,-19 > \\ |a| = [4\sqrt{13}\,,\,14.422] \\ |b| = [\sqrt{85}\,,\,9.220] \\ |a - b| = [\sqrt{365}\,,\,19.105] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 17\,,\,20\,,\,19 > \\ |a| = [\sqrt{211}\,,\,14.526] \\ |b| = [3\sqrt{37}\,,\,18.248] \\ |a + b| = [5\sqrt{42}\,,\,32.404] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 1\,,\,-6\,,\,-1 > \\ |a| = [\sqrt{211}\,,\,14.526] \\ |b| = [3\sqrt{37}\,,\,18.248] \\ |a - b| = [\sqrt{38}\,,\,6.164] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}\,,\,10.630]) \\ ans.3 = (\theta = 48.814\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{145}\,,\,12.042]) \\ ans.3 = (\theta = 311.634\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.12097

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <-4, 5>) \\ ans.3 = (AB = -4\,i + 5\,j) \\ ans.4 = (|AB| = (\sqrt{41}, 6.403)) \\ ans.5 = (u = -0.625\,i + 0.781\,j) \\ ans.6 = (c = -4.998\,i + 6.247\,j) \\ ans.7 = (d = 5.622\,i - 7.028\,j) \end{bmatrix}, \quad Ans2 = \begin{bmatrix} ans.2 = (AB = <-4, 12>) \\ ans.3 = (AB = -4\,i + 12\,j) \\ ans.4 = (|AB| = (4\sqrt{10}, 12.649)) \\ ans.5 = (u = -0.316\,i + 0.949\,j) \\ ans.6 = (c = -2.214\,i + 6.641\,j) \\ ans.7 = (d = 2.846\,i - 8.538\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <7, -5, -3>) \\ ans.2 = (AB = 7\,i - 5\,j - 3\,k) \\ ans.3 = (|AB| = (\sqrt{83}, 9.110)) \\ ans.4 = (u = 0.768\,i - 0.549\,j - 0.329\,k) \\ ans.5 = (c = 3.842\,i - 2.744\,j - 1.646\,k) \\ ans.6 = (d = -4.610\,i + 3.293\,j + 1.976\,k) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} ans.1 = (AB = <3, 3, 3>) \\ ans.2 = (AB = 3\,i + 3\,j + 3\,k) \\ ans.3 = (|AB| = (3\sqrt{3}, 5.196)) \\ ans.4 = (u = 0.577\,i + 0.577\,j + 0.577\,k) \\ ans.5 = (c = 5.196\,i + 5.196\,j + 5.196\,k) \\ ans.6 = (d = -3.464\,i - 3.464\,j - 3.464\,k) \end{bmatrix}$$

$$Ans5 = <-10, -40>, \quad Ans6 = <30, -9>, \quad Ans7 = <32, -30, 9>, \quad Ans8 = <-41, -13, 53>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{61}, 7.810]] \\ ans.2 = \begin{bmatrix} b = <20, 24> \\ |b| = [4\sqrt{61}, 31.241] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-15, -18> \\ |c| = [3\sqrt{61}, 23.431] \end{bmatrix} \end{bmatrix}, \quad Ans10 = \begin{bmatrix} a + b = <4, 20> \\ |a| = [\sqrt{185}, 13.601] \\ |b| = [\sqrt{193}, 13.892] \\ |a + b| = [4\sqrt{26}, 20.396] \end{bmatrix}, \quad Ans11 = \begin{bmatrix} a - b = <18, -4> \\ |a| = [\sqrt{185}, 13.601] \\ |b| = [\sqrt{193}, 13.892] \\ |a - b| = [2\sqrt{85}, 18.439] \end{bmatrix}, \quad \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <1, 7, -7> \\ |a| = [\sqrt{413}, 20.322] \\ |b| = [\sqrt{142}, 11.916] \\ |a + b| = [3\sqrt{11}, 9.950] \end{bmatrix}, \quad Ans13 = \begin{bmatrix} a - b = <19, 17, -19> \\ |a| = [\sqrt{413}, 20.322] \\ |b| = [\sqrt{142}, 11.916] \\ |a - b| = [\sqrt{1011}, 31.796] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 40.601\ degrees) \end{bmatrix}, \quad Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 129.806\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.12172

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -3\,,\, 5 >) \\ ans.3 = (AB = -3\,i + 5\,j) \\ ans.4 = (|AB| = (\sqrt{34}, 5.831)) \\ ans.5 = (u = -0.514\,i + 0.857\,j) \\ ans.6 = (c = -3.601\,i + 6.002\,j) \\ ans.7 = (d = 4.116\,i - 6.860\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -7\,,\, -11 >) \\ ans.3 = (AB = -7\,i - 11\,j) \\ ans.4 = (|AB| = (\sqrt{170}, 13.038)) \\ ans.5 = (u = -0.537\,i - 0.844\,j) \\ ans.6 = (c = -3.758\,i - 5.906\,j) \\ ans.7 = (d = 2.684\,i + 4.218\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 5\,,\, 5\,,\, 4 >) \\ ans.2 = (AB = 5\,i + 5\,j + 4\,k) \\ ans.3 = (|AB| = (\sqrt{66}, 8.124)) \\ ans.4 = (u = 0.615\,i + 0.615\,j + 0.492\,k) \\ ans.5 = (c = 4.308\,i + 4.308\,j + 3.447\,k) \\ ans.6 = (d = -5.539\,i - 5.539\,j - 4.431\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -4\,,\, 8\,,\, -6 >) \\ ans.2 = (AB = -4\,i + 8\,j - 6\,k) \\ ans.3 = (|AB| = (2\sqrt{29}, 10.770)) \\ ans.4 = (u = -0.371\,i + 0.743\,j - 0.557\,k) \\ ans.5 = (c = -3.343\,i + 6.685\,j - 5.014\,k) \\ ans.6 = (d = 2.600\,i - 5.199\,j + 3.900\,k) \end{bmatrix}$$

$$Ans5 = < 14\,,\, -10 >, \quad , Ans6 = < -20\,,\, -31 >, \quad , Ans7 = < 9\,,\, -43\,,\, 25 >, \quad , Ans8 = < -24\,,\, -11\,,\, 10 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{145}, 12.042]] \\ ans.2 = \begin{bmatrix} b = < 63\,,\, 56 > \\ |b| = [7\sqrt{145}, 84.291] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -45\,,\, -40 > \\ |c| = [5\sqrt{145}, 60.208] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < -3\,,\, 13 > \\ |a| = [\sqrt{89}, 9.434] \\ |b| = [\sqrt{89}, 9.434] \\ |a + b| = [\sqrt{178}, 13.342] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 13\,,\, 3 > \\ |a| = [\sqrt{89}, 9.434] \\ |b| = [\sqrt{89}, 9.434] \\ |a - b| = [\sqrt{178}, 13.342] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 5\,,\, -5\,,\, 15 > \\ |a| = [2\sqrt{59}, 15.362] \\ |b| = [\sqrt{131}, 11.446] \\ |a + b| = [5\sqrt{11}, 16.583] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 15\,,\, -15\,,\, -3 > \\ |a| = [2\sqrt{59}, 15.362] \\ |b| = [\sqrt{131}, 11.446] \\ |a - b| = [3\sqrt{51}, 21.424] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 32.005 \text{ degrees}) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 139.399 \text{ degrees}) \end{bmatrix}$$

Tutorial01 Answers for No.12173

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <-5, -7>) \\ ans.3 = (AB = -5\,i - 7\,j) \\ ans.4 = (|AB| = (\sqrt{74}, 8.602)) \\ ans.5 = (u = -0.581\,i - 0.814\,j) \\ ans.6 = (c = -2.906\,i - 4.069\,j) \\ ans.7 = (d = 3.487\,i + 4.882\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <5, -8>) \\ ans.3 = (AB = 5\,i - 8\,j) \\ ans.4 = (|AB| = (\sqrt{89}, 9.434)) \\ ans.5 = (u = 0.530\,i - 0.848\,j) \\ ans.6 = (c = 2.650\,i - 4.240\,j) \\ ans.7 = (d = -4.240\,i + 6.784\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <6, 3, -9>) \\ ans.2 = (AB = 6\,i + 3\,j - 9\,k) \\ ans.3 = (|AB| = (3\sqrt{14}, 11.225)) \\ ans.4 = (u = 0.535\,i + 0.267\,j - 0.802\,k) \\ ans.5 = (c = 2.673\,i + 1.336\,j - 4.009\,k) \\ ans.6 = (d = -4.811\,i - 2.405\,j + 7.216\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-12, 4, 11>) \\ ans.2 = (AB = -12\,i + 4\,j + 11\,k) \\ ans.3 = (|AB| = (\sqrt{281}, 16.763)) \\ ans.4 = (u = -0.716\,i + 0.239\,j + 0.656\,k) \\ ans.5 = (c = -5.011\,i + 1.670\,j + 4.593\,k) \\ ans.6 = (d = 4.295\,i - 1.432\,j - 3.937\,k) \end{bmatrix}$$

$$Ans5 = <-6, -34>, \quad , Ans6 = <16, -8>, \quad , Ans7 = <16, 7, -11>, \quad , Ans8 = <-21, 33, 35>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{89}, 9.434]] \\ ans.2 = \begin{bmatrix} b = <20, 32> \\ |b| = [4\sqrt{89}, 37.736] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-15, -24> \\ |c| = [3\sqrt{89}, 28.302] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <8, 17> \\ |a| = [13, 13.000] \\ |b| = [\sqrt{194}, 13.928] \\ |a + b| = [\sqrt{353}, 18.788] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-18, 7> \\ |a| = [13, 13.000] \\ |b| = [\sqrt{194}, 13.928] \\ |a - b| = [\sqrt{373}, 19.313] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-20, 5, 4> \\ |a| = [3\sqrt{41}, 19.209] \\ |b| = [\sqrt{138}, 11.747] \\ |a + b| = [21, 21.000] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <-4, 19, 14> \\ |a| = [3\sqrt{41}, 19.209] \\ |b| = [\sqrt{138}, 11.747] \\ |a - b| = [\sqrt{573}, 23.937] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 52.125\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 140.194\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.12180

$$Ans1 = \begin{bmatrix} ans.2 = (AB = \langle 5, -9 \rangle) \\ ans.3 = (AB = 5\,i - 9\,j) \\ ans.4 = (|AB| = (\sqrt{106}, 10.296)) \\ ans.5 = (u = 0.486\,i - 0.874\,j) \\ ans.6 = (c = 3.885\,i - 6.993\,j) \\ ans.7 = (d = -2.428\,i + 4.371\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = \langle 11, 6 \rangle) \\ ans.3 = (AB = 11\,i + 6\,j) \\ ans.4 = (|AB| = (\sqrt{157}, 12.530)) \\ ans.5 = (u = 0.878\,i + 0.479\,j) \\ ans.6 = (c = 6.145\,i + 3.352\,j) \\ ans.7 = (d = -7.901\,i - 4.310\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = \langle -7, 7, -4 \rangle) \\ ans.2 = (AB = -7\,i + 7\,j - 4\,k) \\ ans.3 = (|AB| = (\sqrt{114}, 10.677)) \\ ans.4 = (u = -0.656\,i + 0.656\,j - 0.375\,k) \\ ans.5 = (c = -3.934\,i + 3.934\,j - 2.248\,k) \\ ans.6 = (d = 3.278\,i - 3.278\,j + 1.873\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = \langle 7, -13, 6 \rangle) \\ ans.2 = (AB = 7\,i - 13\,j + 6\,k) \\ ans.3 = (|AB| = (\sqrt{254}, 15.937)) \\ ans.4 = (u = 0.439\,i - 0.816\,j + 0.376\,k) \\ ans.5 = (c = 2.196\,i - 4.078\,j + 1.882\,k) \\ ans.6 = (d = -2.635\,i + 4.894\,j - 2.259\,k) \end{bmatrix}$$

$$Ans5 = \langle -10, -21 \rangle, \quad , Ans6 = \langle 18, -35 \rangle, \quad , Ans7 = \langle -13, -14, 15 \rangle, \quad , Ans8 = \langle -20, 2, 13 \rangle$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{106}, 10.296]] \\ ans.2 = \begin{bmatrix} b = \langle -20, 36 \rangle \\ |b| = [4\sqrt{106}, 41.183] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = \langle 30, -54 \rangle \\ |c| = [6\sqrt{106}, 61.774] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = \langle 20, -4 \rangle \\ |a| = [3\sqrt{13}, 10.817] \\ |b| = [\sqrt{221}, 14.866] \\ |a + b| = [4\sqrt{26}, 20.396] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = \langle -2, 16 \rangle \\ |a| = [3\sqrt{13}, 10.817] \\ |b| = [\sqrt{221}, 14.866] \\ |a - b| = [2\sqrt{65}, 16.125] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = \langle 13, -4, 4 \rangle \\ |a| = [18, 18.000] \\ |b| = [\sqrt{177}, 13.304] \\ |a + b| = [\sqrt{201}, 14.177] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = \langle -1, -20, 20 \rangle \\ |a| = [18, 18.000] \\ |b| = [\sqrt{177}, 13.304] \\ |a - b| = [3\sqrt{89}, 28.302] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 50.194\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 139.399\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.12256

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <-4, 6>) \\ ans.3 = (AB = -4\,i + 6\,j) \\ ans.4 = (|AB| = (2\sqrt{13}, 7.211)) \\ ans.5 = (u = -0.555\,i + 0.832\,j) \\ ans.6 = (c = -4.438\,i + 6.656\,j) \\ ans.7 = (d = 4.992\,i - 7.488\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <8, 4>) \\ ans.3 = (AB = 8\,i + 4\,j) \\ ans.4 = (|AB| = (4\sqrt{5}, 8.944)) \\ ans.5 = (u = 0.894\,i + 0.447\,j) \\ ans.6 = (c = 8.050\,i + 4.025\,j) \\ ans.7 = (d = -5.367\,i - 2.683\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-5, 4, -7>) \\ ans.2 = (AB = -5\,i + 4\,j - 7\,k) \\ ans.3 = (|AB| = (3\sqrt{10}, 9.487)) \\ ans.4 = (u = -0.527\,i + 0.422\,j - 0.738\,k) \\ ans.5 = (c = -4.216\,i + 3.373\,j - 5.903\,k) \\ ans.6 = (d = 4.743\,i - 3.795\,j + 6.641\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <5, -7, 7>) \\ ans.2 = (AB = 5\,i - 7\,j + 7\,k) \\ ans.3 = (|AB| = (\sqrt{123}, 11.091)) \\ ans.4 = (u = 0.451\,i - 0.631\,j + 0.631\,k) \\ ans.5 = (c = 2.254\,i - 3.156\,j + 3.156\,k) \\ ans.6 = (d = -4.058\,i + 5.681\,j - 5.681\,k) \end{bmatrix}$$

$$Ans5 = <17, 23>, \quad , Ans6 = <-24, 12>, \quad , Ans7 = <-30, -23, 29>, \quad , Ans8 = <-21, -7, 2>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{145}, 12.042]] \\ ans.2 = \begin{bmatrix} b = <-32, -36> \\ |b| = [4\sqrt{145}, 48.166] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <48, 54> \\ |c| = [6\sqrt{145}, 72.250] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <14, -6> \\ |a| = [3\sqrt{13}, 10.817] \\ |b| = [13, 13.000] \\ |a + b| = [2\sqrt{58}, 15.232] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <4, 18> \\ |a| = [3\sqrt{13}, 10.817] \\ |b| = [13, 13.000] \\ |a - b| = [2\sqrt{85}, 18.439] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-6, 7, -7> \\ |a| = [\sqrt{219}, 14.799] \\ |b| = [\sqrt{301}, 17.349] \\ |a + b| = [\sqrt{134}, 11.576] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <16, -17, -19> \\ |a| = [\sqrt{219}, 14.799] \\ |b| = [\sqrt{301}, 17.349] \\ |a - b| = [\sqrt{906}, 30.100] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 52.125\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 302.005\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.12278

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <\text{-}5, \text{-}7>) \\ ans.3 = (AB = -5\,i - 7\,j) \\ ans.4 = (|AB| = (\sqrt{74}, 8.602)) \\ ans.5 = (u = -0.581\,i - 0.814\,j) \\ ans.6 = (c = -4.069\,i - 5.696\,j) \\ ans.7 = (d = 3.487\,i + 4.882\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <10, \text{-}5>) \\ ans.3 = (AB = 10\,i - 5\,j) \\ ans.4 = (|AB| = (5\sqrt{5}, 11.180)) \\ ans.5 = (u = 0.894\,i - 0.447\,j) \\ ans.6 = (c = 4.472\,i - 2.236\,j) \\ ans.7 = (d = -5.367\,i + 2.683\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <5, \text{-}10, 9>) \\ ans.2 = (AB = 5\,i - 10\,j + 9\,k) \\ ans.3 = (|AB| = (\sqrt{206}, 14.353)) \\ ans.4 = (u = 0.348\,i - 0.697\,j + 0.627\,k) \\ ans.5 = (c = 2.439\,i - 4.877\,j + 4.389\,k) \\ ans.6 = (d = -2.090\,i + 4.180\,j - 3.762\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <11, \text{-}4, 13>) \\ ans.2 = (AB = 11\,i - 4\,j + 13\,k) \\ ans.3 = (|AB| = (3\sqrt{34}, 17.493)) \\ ans.4 = (u = 0.629\,i - 0.229\,j + 0.743\,k) \\ ans.5 = (c = 3.773\,i - 1.372\,j + 4.459\,k) \\ ans.6 = (d = -5.659\,i + 2.058\,j - 6.688\,k) \end{bmatrix}$$

$$Ans5 = <\text{-}37, \text{-}10>, \quad , Ans6 = <\text{-}11, \text{-}12>, \quad , Ans7 = <\text{-}4, 3, 44>, \quad , Ans8 = <36, \text{-}12, 20>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{61}, 7.810]] \\ ans.2 = \begin{bmatrix} b = <20, \text{-}24> \\ |b| = [4\sqrt{61}, 31.241] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <\text{-}25, 30> \\ |c| = [5\sqrt{61}, 39.051] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <\text{-}8, 14> \\ |a| = [\sqrt{61}, 7.810] \\ |b| = [\sqrt{233}, 15.264] \\ |a + b| = [2\sqrt{65}, 16.125] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <18, \text{-}2> \\ |a| = [\sqrt{61}, 7.810] \\ |b| = [\sqrt{233}, 15.264] \\ |a - b| = [2\sqrt{82}, 18.111] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <0, 1, 16> \\ |a| = [\sqrt{238}, 15.427] \\ |b| = [\sqrt{131}, 11.446] \\ |a + b| = [\sqrt{257}, 16.031] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <18, 11, 6> \\ |a| = [\sqrt{238}, 15.427] \\ |b| = [\sqrt{131}, 11.446] \\ |a - b| = [\sqrt{481}, 21.932] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 41.186\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 320.194\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.12482

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < 4 , -7 >) \\ ans.3 = (AB = 4\,i - 7\,j) \\ ans.4 = (|AB| = (\sqrt{65}, 8.062)) \\ ans.5 = (u = 0.496\,i - 0.868\,j) \\ ans.6 = (c = 3.969\,i - 6.946\,j) \\ ans.7 = (d = -2.977\,i + 5.209\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -6 , -13 >) \\ ans.3 = (AB = -6\,i - 13\,j) \\ ans.4 = (|AB| = (\sqrt{205}, 14.318)) \\ ans.5 = (u = -0.419\,i - 0.908\,j) \\ ans.6 = (c = -3.352\,i - 7.264\,j) \\ ans.7 = (d = 3.772\,i + 8.172\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 6 , 3 , 4 >) \\ ans.2 = (AB = 6\,i + 3\,j + 4\,k) \\ ans.3 = (|AB| = (\sqrt{61}, 7.810)) \\ ans.4 = (u = 0.768\,i + 0.384\,j + 0.512\,k) \\ ans.5 = (c = 3.841\,i + 1.921\,j + 2.561\,k) \\ ans.6 = (d = -5.378\,i - 2.689\,j - 3.585\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -6 , 10 , -10 >) \\ ans.2 = (AB = -6\,i + 10\,j - 10\,k) \\ ans.3 = (|AB| = (2\sqrt{59}, 15.362)) \\ ans.4 = (u = -0.391\,i + 0.651\,j - 0.651\,k) \\ ans.5 = (c = -2.343\,i + 3.906\,j - 3.906\,k) \\ ans.6 = (d = 3.515\,i - 5.859\,j + 5.859\,k) \end{bmatrix}$$

$$Ans5 = < 24 , -20 >, \quad , Ans6 = < 31 , -48 >, \quad , Ans7 = < 4 , -26 , -21 >, \quad , Ans8 = < -47 , -28 , 27 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [3\sqrt{13}, 10.817]] \\ ans.2 = \begin{bmatrix} b = < 36 , -24 > \\ |b| = [12\sqrt{13}, 43.267] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -27 , 18 > \\ |c| = [9\sqrt{13}, 32.450] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 7 , 20 > \\ |a| = [3\sqrt{13}, 10.817] \\ |b| = [\sqrt{290}, 17.029] \\ |a + b| = [\sqrt{449}, 21.190] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -19 , -2 > \\ |a| = [3\sqrt{13}, 10.817] \\ |b| = [\sqrt{290}, 17.029] \\ |a - b| = [\sqrt{365}, 19.105] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 11 , 5 , 16 > \\ |a| = [\sqrt{174}, 13.191] \\ |b| = [\sqrt{142}, 11.916] \\ |a + b| = [\sqrt{402}, 20.050] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -1 , 15 , -2 > \\ |a| = [\sqrt{174}, 13.191] \\ |b| = [\sqrt{142}, 11.916] \\ |a - b| = [\sqrt{230}, 15.166] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 32.005\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 130.601\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.12586

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < 3 , 6 >) \\ ans.3 = (AB = 3\,i + 6\,j) \\ ans.4 = (|AB| = (3\sqrt{5}, 6.708)) \\ ans.5 = (u = 0.447\,i + 0.894\,j) \\ ans.6 = (c = 4.025\,i + 8.050\,j) \\ ans.7 = (d = -3.130\,i - 6.261\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 8 , -5 >) \\ ans.3 = (AB = 8\,i - 5\,j) \\ ans.4 = (|AB| = (\sqrt{89}, 9.434)) \\ ans.5 = (u = 0.848\,i - 0.530\,j) \\ ans.6 = (c = 7.632\,i - 4.770\,j) \\ ans.7 = (d = -5.936\,i + 3.710\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -6 , -6 , -6 >) \\ ans.2 = (AB = -6\,i - 6\,j - 6\,k) \\ ans.3 = (|AB| = (6\sqrt{3}, 10.392)) \\ ans.4 = (u = -0.577\,i - 0.577\,j - 0.577\,k) \\ ans.5 = (c = -3.464\,i - 3.464\,j - 3.464\,k) \\ ans.6 = (d = 5.196\,i + 5.196\,j + 5.196\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -10 , -9 , 5 >) \\ ans.2 = (AB = -10\,i - 9\,j + 5\,k) \\ ans.3 = (|AB| = (\sqrt{206}, 14.353)) \\ ans.4 = (u = -0.697\,i - 0.627\,j + 0.348\,k) \\ ans.5 = (c = -6.271\,i - 5.644\,j + 3.135\,k) \\ ans.6 = (d = 3.484\,i + 3.135\,j - 1.742\,k) \end{bmatrix}$$

$$Ans5 = < 39 , -42 >, \quad , Ans6 = < -49 , 7 >, \quad , Ans7 = < 35 , -30 , 22 >, \quad , Ans8 = < -24 , 6 , 24 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [3\sqrt{13}, 10.817]] \\ ans.2 = \begin{bmatrix} b = < -30 , 45 > \\ |b| = [15\sqrt{13}, 54.083] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 18 , -27 > \\ |c| = [9\sqrt{13}, 32.450] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 20 , -5 > \\ |a| = [\sqrt{185}, 13.601] \\ |b| = [6\sqrt{5}, 13.416] \\ |a + b| = [5\sqrt{17}, 20.616] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -4 , -17 > \\ |a| = [\sqrt{185}, 13.601] \\ |b| = [6\sqrt{5}, 13.416] \\ |a - b| = [\sqrt{305}, 17.464] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -18 , 17 , 1 > \\ |a| = [\sqrt{206}, 14.353] \\ |b| = [\sqrt{182}, 13.491] \\ |a + b| = [\sqrt{614}, 24.779] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 4 , 5 , 11 > \\ |a| = [\sqrt{206}, 14.353] \\ |b| = [\sqrt{182}, 13.491] \\ |a - b| = [9\sqrt{2}, 12.728] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 52.125\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 237.995\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.12677

$$Ans1=\left[\begin{array}{c} ans.2=(AB=<-6\,,\,7>) \\ ans.3=(AB=-6\,i+7\,j) \\ ans.4=(\left|AB\right|=(\sqrt{85},\,9.220)) \\ ans.5=(u=-0.651\,i+0.759\,j) \\ ans.6=(c=-3.905\,i+4.556\,j) \\ ans.7=(d=4.556\,i-5.315\,j) \end{array}\right],\quad ,Ans2=\left[\begin{array}{c} ans.2=(AB=<8\,,\,4>) \\ ans.3=(AB=8\,i+4\,j) \\ ans.4=(\left|AB\right|=(4\sqrt{5},\,8.944)) \\ ans.5=(u=0.894\,i+0.447\,j) \\ ans.6=(c=5.367\,i+2.683\,j) \\ ans.7=(d=-7.155\,i-3.578\,j) \end{array}\right]$$

$$Ans3=\left[\begin{array}{c} ans.1=(AB=<10\,,\,-7\,,\,10>) \\ ans.2=(AB=10\,i-7\,j+10\,k) \\ ans.3=(\left|AB\right|=(\sqrt{249},\,15.780)) \\ ans.4=(u=0.634\,i-0.444\,j+0.634\,k) \\ ans.5=(c=3.802\,i-2.662\,j+3.802\,k) \\ ans.6=(d=-5.070\,i+3.549\,j-5.070\,k) \end{array}\right],\quad ,Ans4=\left[\begin{array}{c} ans.1=(AB=<20\,,\,6\,,\,-8>) \\ ans.2=(AB=20\,i+6\,j-8\,k) \\ ans.3=(\left|AB\right|=(10\sqrt{5},\,22.361)) \\ ans.4=(u=0.894\,i+0.268\,j-0.358\,k) \\ ans.5=(c=8.050\,i+2.415\,j-3.220\,k) \\ ans.6=(d=-6.261\,i-1.878\,j+2.504\,k) \end{array}\right]$$

$$Ans5=<-31\,,\,22>,\quad ,Ans6=<61\,,\,-39>,\quad ,Ans7=<-39\,,\,10\,,\,-32>,\quad ,Ans8=<45\,,\,-17\,,\,38>$$

$$Ans9=\left[\begin{array}{c} ans.1=[\left|a\right|=[\sqrt{89},\,9.434]] \\ ans.2=\left[\begin{array}{c} b=<-35\,,\,56> \\ \left|b\right|=[7\sqrt{89},\,66.038] \end{array}\right] \\ ans.4=\left[\begin{array}{c} c=<20\,,\,-32> \\ \left|c\right|=[4\sqrt{89},\,37.736] \end{array}\right] \end{array}\right],\quad ,Ans10=\left[\begin{array}{c} a+b=<2\,,\,15> \\ \left|a\right|=[\sqrt{74},\,8.602] \\ \left|b\right|=[5\sqrt{5},\,11.180] \\ \left|a+b\right|=[\sqrt{229},\,15.133] \end{array}\right],\quad ,Ans11=\left[\begin{array}{c} a-b=<12\,,\,-5> \\ \left|a\right|=[\sqrt{74},\,8.602] \\ \left|b\right|=[5\sqrt{5},\,11.180] \\ \left|a-b\right|=[13,\,13.000] \end{array}\right],\quad ,\left[\begin{array}{c} M \\ a \\ t \\ h \\ @ \\ MUT \end{array}\right]$$

$$Ans12=\left[\begin{array}{c} a+b=<0\,,\,5\,,\,2> \\ \left|a\right|=[3\sqrt{21},\,13.748] \\ \left|b\right|=[\sqrt{138},\,11.747] \\ \left|a+b\right|=[\sqrt{29},\,5.385] \end{array}\right],\quad ,Ans13=\left[\begin{array}{c} a-b=<16\,,\,15\,,\,-12> \\ \left|a\right|=[3\sqrt{21},\,13.748] \\ \left|b\right|=[\sqrt{138},\,11.747] \\ \left|a-b\right|=[25,\,25.000] \end{array}\right]$$

$$Ans14=\left[\begin{array}{c} ans.2=(\left|a\right|=[\sqrt{61},\,7.810]) \\ ans.3=(\theta=50.194\ degrees) \end{array}\right],\quad ,Ans15=\left[\begin{array}{c} ans.2=(\left|a\right|=[\sqrt{89},\,9.434]) \\ ans.3=(\theta=302.005\ degrees) \end{array}\right]$$

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Tutorial01 Answers for No.13490

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <-7, -3>) \\ ans.3 = (AB = -7\,i - 3\,j) \\ ans.4 = (|AB| = (\sqrt{58}, 7.616)) \\ ans.5 = (u = -0.919\,i - 0.394\,j) \\ ans.6 = (c = -4.596\,i - 1.970\,j) \\ ans.7 = (d = 7.353\,i + 3.151\,j) \end{bmatrix}, \quad Ans2 = \begin{bmatrix} ans.2 = (AB = <11, -3>) \\ ans.3 = (AB = 11\,i - 3\,j) \\ ans.4 = (|AB| = (\sqrt{130}, 11.402)) \\ ans.5 = (u = 0.965\,i - 0.263\,j) \\ ans.6 = (c = 5.789\,i - 1.579\,j) \\ ans.7 = (d = -6.753\,i + 1.842\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-9, -3, -3>) \\ ans.2 = (AB = -9\,i - 3\,j - 3\,k) \\ ans.3 = (|AB| = (3\sqrt{11}, 9.950)) \\ ans.4 = (u = -0.905\,i - 0.302\,j - 0.302\,k) \\ ans.5 = (c = -6.332\,i - 2.111\,j - 2.111\,k) \\ ans.6 = (d = 4.523\,i + 1.508\,j + 1.508\,k) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} ans.1 = (AB = <5, -7, 20>) \\ ans.2 = (AB = 5\,i - 7\,j + 20\,k) \\ ans.3 = (|AB| = (\sqrt{474}, 21.772)) \\ ans.4 = (u = 0.230\,i - 0.322\,j + 0.919\,k) \\ ans.5 = (c = 1.837\,i - 2.572\,j + 7.349\,k) \\ ans.6 = (d = -1.378\,i + 1.929\,j - 5.512\,k) \end{bmatrix}$$

$$Ans5 = <23, 10>, \quad Ans6 = <9, -22>, \quad Ans7 = <-30, -15, 58>, \quad Ans8 = <-20, 18, -41>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{106}, 10.296]] \\ ans.2 = \begin{bmatrix} b = <-54, 30> \\ |b| = [6\sqrt{106}, 61.774] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <27, -15> \\ |c| = [3\sqrt{106}, 30.887] \end{bmatrix} \end{bmatrix}, \quad Ans10 = \begin{bmatrix} a + b = <16, -2> \\ |a| = [\sqrt{145}, 12.042] \\ |b| = [\sqrt{85}, 9.220] \\ |a + b| = [2\sqrt{65}, 16.125] \end{bmatrix}, \quad Ans11 = \begin{bmatrix} a - b = <2, -14> \\ |a| = [\sqrt{145}, 12.042] \\ |b| = [\sqrt{85}, 9.220] \\ |a - b| = [10\sqrt{2}, 14.142] \end{bmatrix}, \quad \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-17, -3, 0> \\ |a| = [\sqrt{321}, 17.916] \\ |b| = [\sqrt{185}, 13.601] \\ |a + b| = [\sqrt{298}, 17.263] \end{bmatrix}, \quad Ans13 = \begin{bmatrix} a - b = <-5, -17, 20> \\ |a| = [\sqrt{321}, 17.916] \\ |b| = [\sqrt{185}, 13.601] \\ |a - b| = [\sqrt{714}, 26.721] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 29.055\ degrees) \end{bmatrix}, \quad Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{74}, 8.602]) \\ ans.3 = (\theta = 215.538\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.13500

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -7 , 5 >) \\ ans.3 = (AB = -7\, i + 5\, j) \\ ans.4 = (|AB| = (\sqrt{74}, 8.602)) \\ ans.5 = (u = -0.814\, i + 0.581\, j) \\ ans.6 = (c = -4.882\, i + 3.487\, j) \\ ans.7 = (d = 5.696\, i - 4.069\, j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 3 , -11 >) \\ ans.3 = (AB = 3\, i - 11\, j) \\ ans.4 = (|AB| = (\sqrt{130}, 11.402)) \\ ans.5 = (u = 0.263\, i - 0.965\, j) \\ ans.6 = (c = 1.579\, i - 5.789\, j) \\ ans.7 = (d = -1.316\, i + 4.824\, j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 3 , -7 , 9 >) \\ ans.2 = (AB = 3\, i - 7\, j + 9\, k) \\ ans.3 = (|AB| = (\sqrt{139}, 11.790)) \\ ans.4 = (u = 0.254\, i - 0.594\, j + 0.763\, k) \\ ans.5 = (c = 1.527\, i - 3.562\, j + 4.580\, k) \\ ans.6 = (d = -2.290\, i + 5.344\, j - 6.870\, k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 14 , -11 , -4 >) \\ ans.2 = (AB = 14\, i - 11\, j - 4\, k) \\ ans.3 = (|AB| = (3\sqrt{37}, 18.248)) \\ ans.4 = (u = 0.767\, i - 0.603\, j - 0.219\, k) \\ ans.5 = (c = 6.138\, i - 4.822\, j - 1.754\, k) \\ ans.6 = (d = -3.836\, i + 3.014\, j + 1.096\, k) \end{bmatrix}$$

$$Ans5 = < -21 , -1 >, \quad , Ans6 = < 13 , -35 >, \quad , Ans7 = < -33 , 39 , 2 >, \quad , Ans8 = < -40 , 20 , 21 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{61}, 7.810]] \\ ans.2 = \begin{bmatrix} b = < -30 , 36 > \\ |b| = [6\sqrt{61}, 46.861] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 25 , -30 > \\ |c| = [5\sqrt{61}, 39.051] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 17 , 1 > \\ |a| = [10, 10.000] \\ |b| = [\sqrt{202}, 14.213] \\ |a + b| = [\sqrt{290}, 17.029] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -5 , -17 > \\ |a| = [10, 10.000] \\ |b| = [\sqrt{202}, 14.213] \\ |a - b| = [\sqrt{314}, 17.720] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 0 , -3 , 15 > \\ |a| = [\sqrt{181}, 13.454] \\ |b| = [\sqrt{193}, 13.892] \\ |a + b| = [3\sqrt{26}, 15.297] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 12 , 19 , 3 > \\ |a| = [\sqrt{181}, 13.454] \\ |b| = [\sqrt{193}, 13.892] \\ |a - b| = [\sqrt{514}, 22.672] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 52.125\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 221.186\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.13637

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <8, -8>) \\ ans.3 = (AB = 8\,i - 8\,j) \\ ans.4 = (|AB| = (8\sqrt{2}, 11.314)) \\ ans.5 = (u = 0.707\,i - 0.707\,j) \\ ans.6 = (c = 3.536\,i - 3.536\,j) \\ ans.7 = (d = -6.364\,i + 6.364\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <5, -6>) \\ ans.3 = (AB = 5\,i - 6\,j) \\ ans.4 = (|AB| = (\sqrt{61}, 7.810)) \\ ans.5 = (u = 0.640\,i - 0.768\,j) \\ ans.6 = (c = 3.201\,i - 3.841\,j) \\ ans.7 = (d = -5.762\,i + 6.914\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-5, 6, -5>) \\ ans.2 = (AB = -5\,i + 6\,j - 5\,k) \\ ans.3 = (|AB| = (\sqrt{86}, 9.274)) \\ ans.4 = (u = -0.539\,i + 0.647\,j - 0.539\,k) \\ ans.5 = (c = -3.235\,i + 3.882\,j - 3.235\,k) \\ ans.6 = (d = 2.696\,i - 3.235\,j + 2.696\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <17, -10, -6>) \\ ans.2 = (AB = 17\,i - 10\,j - 6\,k) \\ ans.3 = (|AB| = (5\sqrt{17}, 20.616)) \\ ans.4 = (u = 0.825\,i - 0.485\,j - 0.291\,k) \\ ans.5 = (c = 6.597\,i - 3.881\,j - 2.328\,k) \\ ans.6 = (d = -7.422\,i + 4.366\,j + 2.619\,k) \end{bmatrix}$$

$$Ans5 = <-25, 12>, \quad , Ans6 = <-5, -15>, \quad , Ans7 = <0, -8, 18>, \quad , Ans8 = <25, -25, 20>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [10, 10.000]] \\ ans.2 = \begin{bmatrix} b = <-24, -32> \\ |b| = [40, 40.000] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <36, 48> \\ |c| = [60, 60.000] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <-2, 19> \\ |a| = [\sqrt{218}, 14.765] \\ |b| = [\sqrt{61}, 7.810] \\ |a + b| = [\sqrt{365}, 19.105] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-12, 7> \\ |a| = [\sqrt{218}, 14.765] \\ |b| = [\sqrt{61}, 7.810] \\ |a - b| = [\sqrt{193}, 13.892] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-18, -2, 1> \\ |a| = [\sqrt{269}, 16.401] \\ |b| = [\sqrt{174}, 13.191] \\ |a + b| = [\sqrt{329}, 18.138] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <-8, 18, -13> \\ |a| = [\sqrt{269}, 16.401] \\ |b| = [\sqrt{174}, 13.191] \\ |a - b| = [\sqrt{557}, 23.601] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 32.005\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 319.399\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645101

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -4 , 6 >) \\ ans.3 = (AB = -4\, i + 6\, j) \\ ans.4 = (\left|AB\right| = (2\sqrt{13}, 7.211)) \\ ans.5 = (u = -0.555\, i + 0.832\, j) \\ ans.6 = (c = -4.438\, i + 6.656\, j) \\ ans.7 = (d = 2.774\, i - 4.160\, j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 13 , 3 >) \\ ans.3 = (AB = 13\, i + 3\, j) \\ ans.4 = (\left|AB\right| = (\sqrt{178}, 13.342)) \\ ans.5 = (u = 0.974\, i + 0.225\, j) \\ ans.6 = (c = 5.846\, i + 1.349\, j) \\ ans.7 = (d = -4.872\, i - 1.124\, j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -4 , 9 , -3 >) \\ ans.2 = (AB = -4\, i + 9\, j - 3\, k) \\ ans.3 = (\left|AB\right| = (\sqrt{106}, 10.296)) \\ ans.4 = (u = -0.389\, i + 0.874\, j - 0.291\, k) \\ ans.5 = (c = -3.497\, i + 7.867\, j - 2.622\, k) \\ ans.6 = (d = 2.331\, i - 5.245\, j + 1.748\, k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -5 , 9 , -12 >) \\ ans.2 = (AB = -5\, i + 9\, j - 12\, k) \\ ans.3 = (\left|AB\right| = (5\sqrt{10}, 15.811)) \\ ans.4 = (u = -0.316\, i + 0.569\, j - 0.759\, k) \\ ans.5 = (c = -2.846\, i + 5.123\, j - 6.831\, k) \\ ans.6 = (d = 2.214\, i - 3.984\, j + 5.313\, k) \end{bmatrix}$$

$$Ans5 = < 2 , 24 >, \quad , Ans6 = < -23 , -8 >, \quad , Ans7 = < -19 , 4 , 27 >, \quad , Ans8 = < 16 , 8 , 6 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [\left|a\right| = [\sqrt{106}, 10.296]] \\ ans.2 = \begin{bmatrix} b = < -27 , 15 > \\ \left|b\right| = [3\sqrt{106}, 30.887] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 45 , -25 > \\ \left|c\right| = [5\sqrt{106}, 51.478] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 14 , -5 > \\ \left|a\right| = [\sqrt{157}, 12.530] \\ \left|b\right| = [10, 10.000] \\ \left|a + b\right| = [\sqrt{221}, 14.866] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -2 , -17 > \\ \left|a\right| = [\sqrt{157}, 12.530] \\ \left|b\right| = [10, 10.000] \\ \left|a - b\right| = [\sqrt{293}, 17.117] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 0 , -2 , -18 > \\ \left|a\right| = [\sqrt{269}, 16.401] \\ \left|b\right| = [\sqrt{185}, 13.601] \\ \left|a + b\right| = [2\sqrt{82}, 18.111] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -20 , 12 , -6 > \\ \left|a\right| = [\sqrt{269}, 16.401] \\ \left|b\right| = [\sqrt{185}, 13.601] \\ \left|a - b\right| = [2\sqrt{145}, 24.083] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (\left|a\right| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 40.601\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (\left|a\right| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 240.945\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645102

$$Ans1=\begin{bmatrix} ans.2=(AB=<-8,-6>) \\ ans.3=(AB=-8\,i-6\,j) \\ ans.4=(|AB|=(10,\ 10.000)) \\ ans.5=(u=-0.800\,i-0.600\,j) \\ ans.6=(c=-7.200\,i-5.400\,j) \\ ans.7=(d=4.800\,i+3.600\,j) \end{bmatrix},\quad ,Ans2=\begin{bmatrix} ans.2=(AB=<9,-4>) \\ ans.3=(AB=9\,i-4\,j) \\ ans.4=(|AB|=(\sqrt{97},9.849)) \\ ans.5=(u=0.914\,i-0.406\,j) \\ ans.6=(c=4.569\,i-2.031\,j) \\ ans.7=(d=-5.483\,i+2.437\,j) \end{bmatrix}$$

$$Ans3=\begin{bmatrix} ans.1=(AB=<-3,-10,4>) \\ ans.2=(AB=-3\,i-10\,j+4\,k) \\ ans.3=(|AB|=(5\sqrt{5},11.180)) \\ ans.4=(u=-0.268\,i-0.894\,j+0.358\,k) \\ ans.5=(c=-2.147\,i-7.155\,j+2.862\,k) \\ ans.6=(d=1.878\,i+6.261\,j-2.504\,k) \end{bmatrix},\quad ,Ans4=\begin{bmatrix} ans.1=(AB=<-16,9,16>) \\ ans.2=(AB=-16\,i+9\,j+16\,k) \\ ans.3=(|AB|=(\sqrt{593},24.352)) \\ ans.4=(u=-0.657\,i+0.370\,j+0.657\,k) \\ ans.5=(c=-5.256\,i+2.957\,j+5.256\,k) \\ ans.6=(d=3.285\,i-1.848\,j-3.285\,k) \end{bmatrix}$$

$$Ans5=<17,32>,\quad ,Ans6=<-28,56>,\quad ,Ans7=<-13,55,-29>,\quad ,Ans8=<-11,0,-2>$$

$$Ans9=\begin{bmatrix} ans.1=[|a|=[\sqrt{106},10.296]] \\ ans.2=\begin{bmatrix} b=<27,-15> \\ |b|=[3\sqrt{106},30.887] \end{bmatrix} \\ ans.4=\begin{bmatrix} c=<-45,25> \\ |c|=[5\sqrt{106},51.478] \end{bmatrix} \end{bmatrix},\quad ,Ans10=\begin{bmatrix} a+b=<15,5> \\ |a|=[\sqrt{181},13.454] \\ |b|=[\sqrt{61},7.810] \\ |a+b|=[5\sqrt{10},15.811] \end{bmatrix},\quad ,Ans11=\begin{bmatrix} a-b=<3,15> \\ |a|=[\sqrt{181},13.454] \\ |b|=[\sqrt{61},7.810] \\ |a-b|=[3\sqrt{26},15.297] \end{bmatrix},\quad ,\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12=\begin{bmatrix} a+b=<0,-2,-3> \\ |a|=[\sqrt{114},10.677] \\ |b|=[5\sqrt{5},11.180] \\ |a+b|=[\sqrt{13},3.606] \end{bmatrix},\quad ,Ans13=\begin{bmatrix} a-b=<10,-14,13> \\ |a|=[\sqrt{114},10.677] \\ |b|=[5\sqrt{5},11.180] \\ |a-b|=[\sqrt{465},21.564] \end{bmatrix}$$

$$Ans14=\begin{bmatrix} ans.2=(|a|=[\sqrt{61},7.810]) \\ ans.3=(\theta=39.806\ degrees) \end{bmatrix},\quad ,Ans15=\begin{bmatrix} ans.2=(|a|=[\sqrt{85},9.220]) \\ ans.3=(\theta=220.601\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645103

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <-9, -3>) \\ ans.3 = (AB = -9\,i - 3\,j) \\ ans.4 = (|AB| = (3\sqrt{10}, 9.487)) \\ ans.5 = (u = -0.949\,i - 0.316\,j) \\ ans.6 = (c = -8.538\,i - 2.846\,j) \\ ans.7 = (d = 4.743\,i + 1.581\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <-10, -4>) \\ ans.3 = (AB = -10\,i - 4\,j) \\ ans.4 = (|AB| = (2\sqrt{29}, 10.770)) \\ ans.5 = (u = -0.928\,i - 0.371\,j) \\ ans.6 = (c = -6.499\,i - 2.600\,j) \\ ans.7 = (d = 4.642\,i + 1.857\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <4, -5, 10>) \\ ans.2 = (AB = 4\,i - 5\,j + 10\,k) \\ ans.3 = (|AB| = (\sqrt{141}, 11.874)) \\ ans.4 = (u = 0.337\,i - 0.421\,j + 0.842\,k) \\ ans.5 = (c = 3.032\,i - 3.790\,j + 7.579\,k) \\ ans.6 = (d = -2.358\,i + 2.948\,j - 5.895\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <14, -12, 8>) \\ ans.2 = (AB = 14\,i - 12\,j + 8\,k) \\ ans.3 = (|AB| = (2\sqrt{101}, 20.100)) \\ ans.4 = (u = 0.697\,i - 0.597\,j + 0.398\,k) \\ ans.5 = (c = 3.483\,i - 2.985\,j + 1.990\,k) \\ ans.6 = (d = -5.572\,i + 4.776\,j - 3.184\,k) \end{bmatrix}$$

$$Ans5 = <48, -10>, \quad , Ans6 = <40, -27>, \quad , Ans7 = <14, 42, 33>, \quad , Ans8 = <-33, 21, -7>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{106}, 10.296]] \\ ans.2 = \begin{bmatrix} b = <-45, 25> \\ |b| = [5\sqrt{106}, 51.478] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <27, -15> \\ |c| = [3\sqrt{106}, 30.887] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <20, -2> \\ |a| = [4\sqrt{13}, 14.422] \\ |b| = [2\sqrt{41}, 12.806] \\ |a + b| = [2\sqrt{101}, 20.100] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <4, 18> \\ |a| = [4\sqrt{13}, 14.422] \\ |b| = [2\sqrt{41}, 12.806] \\ |a - b| = [2\sqrt{85}, 18.439] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <2, 2, -2> \\ |a| = [3\sqrt{30}, 16.432] \\ |b| = [\sqrt{226}, 15.033] \\ |a + b| = [2\sqrt{3}, 3.464] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <20, 18, 16> \\ |a| = [3\sqrt{30}, 16.432] \\ |b| = [\sqrt{226}, 15.033] \\ |a - b| = [14\sqrt{5}, 31.305] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{74}, 8.602]) \\ ans.3 = (\theta = 54.462\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 147.995\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645104

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <4, -9>) \\ ans.3 = (AB = 4\,i - 9\,j) \\ ans.4 = (|AB| = (\sqrt{97}, 9.849)) \\ ans.5 = (u = 0.406\,i - 0.914\,j) \\ ans.6 = (c = 2.031\,i - 4.569\,j) \\ ans.7 = (d = -3.655\,i + 8.224\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <13, -4>) \\ ans.3 = (AB = 13\,i - 4\,j) \\ ans.4 = (|AB| = (\sqrt{185}, 13.601)) \\ ans.5 = (u = 0.956\,i - 0.294\,j) \\ ans.6 = (c = 4.779\,i - 1.470\,j) \\ ans.7 = (d = -7.646\,i + 2.353\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <5, -5, 5>) \\ ans.2 = (AB = 5\,i - 5\,j + 5\,k) \\ ans.3 = (|AB| = (5\sqrt{3}, 8.660)) \\ ans.4 = (u = 0.577\,i - 0.577\,j + 0.577\,k) \\ ans.5 = (c = 2.887\,i - 2.887\,j + 2.887\,k) \\ ans.6 = (d = -3.464\,i + 3.464\,j - 3.464\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-7, 8, -4>) \\ ans.2 = (AB = -7\,i + 8\,j - 4\,k) \\ ans.3 = (|AB| = (\sqrt{129}, 11.358)) \\ ans.4 = (u = -0.616\,i + 0.704\,j - 0.352\,k) \\ ans.5 = (c = -3.698\,i + 4.226\,j - 2.113\,k) \\ ans.6 = (d = 3.082\,i - 3.522\,j + 1.761\,k) \end{bmatrix}$$

$$Ans5 = <-3, -16>, \quad , Ans6 = <-52, 34>, \quad , Ans7 = <-40, 31, -52>, \quad , Ans8 = <-33, 44, 58>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{74}, 8.602]] \\ ans.2 = \begin{bmatrix} b = <49, 35> \\ |b| = [7\sqrt{74}, 60.216] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-35, -25> \\ |c| = [5\sqrt{74}, 43.012] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <16, 2> \\ |a| = [\sqrt{113}, 10.630] \\ |b| = [\sqrt{181}, 13.454] \\ |a + b| = [2\sqrt{65}, 16.125] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-2, -18> \\ |a| = [\sqrt{113}, 10.630] \\ |b| = [\sqrt{181}, 13.454] \\ |a - b| = [2\sqrt{82}, 18.111] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-15, -7, -4> \\ |a| = [\sqrt{155}, 12.450] \\ |b| = [\sqrt{301}, 17.349] \\ |a + b| = [\sqrt{290}, 17.029] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <-3, 17, 18> \\ |a| = [\sqrt{155}, 12.450] \\ |b| = [\sqrt{301}, 17.349] \\ |a - b| = [\sqrt{622}, 24.940] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 49.399\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 212.005\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645105

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <4, 7>) \\ ans.3 = (AB = 4\,i + 7\,j) \\ ans.4 = (|AB| = (\sqrt{65}, 8.062)) \\ ans.5 = (u = 0.496\,i + 0.868\,j) \\ ans.6 = (c = 3.473\,i + 6.078\,j) \\ ans.7 = (d = -2.481\,i - 4.341\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <-12, -4>) \\ ans.3 = (AB = -12\,i - 4\,j) \\ ans.4 = (|AB| = (4\sqrt{10}, 12.649)) \\ ans.5 = (u = -0.949\,i - 0.316\,j) \\ ans.6 = (c = -8.538\,i - 2.846\,j) \\ ans.7 = (d = 6.641\,i + 2.214\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-8, 4, 3>) \\ ans.2 = (AB = -8\,i + 4\,j + 3\,k) \\ ans.3 = (|AB| = (\sqrt{89}, 9.434)) \\ ans.4 = (u = -0.848\,i + 0.424\,j + 0.318\,k) \\ ans.5 = (c = -6.784\,i + 3.392\,j + 2.544\,k) \\ ans.6 = (d = 5.088\,i - 2.544\,j - 1.908\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <5, 8, 12>) \\ ans.2 = (AB = 5\,i + 8\,j + 12\,k) \\ ans.3 = (|AB| = (\sqrt{233}, 15.264)) \\ ans.4 = (u = 0.328\,i + 0.524\,j + 0.786\,k) \\ ans.5 = (c = 1.638\,i + 2.620\,j + 3.931\,k) \\ ans.6 = (d = -2.293\,i - 3.669\,j - 5.503\,k) \end{bmatrix}$$

$$Ans5 = <-15, -16>, \quad , Ans6 = <8, 18>, \quad , Ans7 = <8, 14, -6>, \quad , Ans8 = <17, 25, -1>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [10, 10.000]] \\ ans.2 = \begin{bmatrix} b = <42, -56> \\ |b| = [70, 70.000] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-18, 24> \\ |c| = [30, 30.000] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <-3, 18> \\ |a| = [5\sqrt{5}, 11.180] \\ |b| = [\sqrt{218}, 14.765] \\ |a + b| = [3\sqrt{37}, 18.248] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-17, -8> \\ |a| = [5\sqrt{5}, 11.180] \\ |b| = [\sqrt{218}, 14.765] \\ |a - b| = [\sqrt{353}, 18.788] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <12, -17, 6> \\ |a| = [3\sqrt{11}, 9.950] \\ |b| = [3\sqrt{30}, 16.432] \\ |a + b| = [\sqrt{469}, 21.656] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <-2, 3, -16> \\ |a| = [3\sqrt{11}, 9.950] \\ |b| = [3\sqrt{30}, 16.432] \\ |a - b| = [\sqrt{269}, 16.401] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 60.945\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 217.875\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645106

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <-3, -4>) \\ ans.3 = (AB = -3\,i - 4\,j) \\ ans.4 = (|AB| = (5, 5.000)) \\ ans.5 = (u = -0.600\,i - 0.800\,j) \\ ans.6 = (c = -5.400\,i - 7.200\,j) \\ ans.7 = (d = 4.200\,i + 5.600\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <-4, 15>) \\ ans.3 = (AB = -4\,i + 15\,j) \\ ans.4 = (|AB| = (\sqrt{241}, 15.524)) \\ ans.5 = (u = -0.258\,i + 0.966\,j) \\ ans.6 = (c = -2.061\,i + 7.730\,j) \\ ans.7 = (d = 1.288\,i - 4.831\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-5, 3, 4>) \\ ans.2 = (AB = -5\,i + 3\,j + 4\,k) \\ ans.3 = (|AB| = (5\sqrt{2}, 7.071)) \\ ans.4 = (u = -0.707\,i + 0.424\,j + 0.566\,k) \\ ans.5 = (c = -4.243\,i + 2.546\,j + 3.394\,k) \\ ans.6 = (d = 4.950\,i - 2.970\,j - 3.960\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <14, 9, -13>) \\ ans.2 = (AB = 14\,i + 9\,j - 13\,k) \\ ans.3 = (|AB| = (\sqrt{446}, 21.119)) \\ ans.4 = (u = 0.663\,i + 0.426\,j - 0.616\,k) \\ ans.5 = (c = 3.978\,i + 2.557\,j - 3.693\,k) \\ ans.6 = (d = -5.966\,i - 3.835\,j + 5.540\,k) \end{bmatrix}$$

$$Ans5 = <-18, -1>, \quad , Ans6 = <-17, 32>, \quad , Ans7 = <19, 20, 17>, \quad , Ans8 = <-13, 20, -12>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{61}, 7.810]] \\ ans.2 = \begin{bmatrix} b = <-42, 35> \\ |b| = [7\sqrt{61}, 54.672] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <24, -20> \\ |c| = [4\sqrt{61}, 31.241] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <16, 6> \\ |a| = [\sqrt{146}, 12.083] \\ |b| = [\sqrt{146}, 12.083] \\ |a + b| = [2\sqrt{73}, 17.088] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-6, 16> \\ |a| = [\sqrt{146}, 12.083] \\ |b| = [\sqrt{146}, 12.083] \\ |a - b| = [2\sqrt{73}, 17.088] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <3, -20, 16> \\ |a| = [\sqrt{326}, 18.055] \\ |b| = [\sqrt{213}, 14.595] \\ |a + b| = [\sqrt{665}, 25.788] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <19, -6, -4> \\ |a| = [\sqrt{326}, 18.055] \\ |b| = [\sqrt{213}, 14.595] \\ |a - b| = [\sqrt{413}, 20.322] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{74}, 8.602]) \\ ans.3 = (\theta = 54.462\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 122.005\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645107

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -5, -5 >) \\ ans.3 = (AB = -5\,i - 5\,j) \\ ans.4 = (|AB| = (5\sqrt{2}, 7.071)) \\ ans.5 = (u = -0.707\,i - 0.707\,j) \\ ans.6 = (c = -4.243\,i - 4.243\,j) \\ ans.7 = (d = 5.657\,i + 5.657\,j) \end{bmatrix}, \quad Ans2 = \begin{bmatrix} ans.2 = (AB = < 4, 13 >) \\ ans.3 = (AB = 4\,i + 13\,j) \\ ans.4 = (|AB| = (\sqrt{185}, 13.601)) \\ ans.5 = (u = 0.294\,i + 0.956\,j) \\ ans.6 = (c = 2.647\,i + 8.602\,j) \\ ans.7 = (d = -1.470\,i - 4.779\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -4, 10, -3 >) \\ ans.2 = (AB = -4\,i + 10\,j - 3\,k) \\ ans.3 = (|AB| = (5\sqrt{5}, 11.180)) \\ ans.4 = (u = -0.358\,i + 0.894\,j - 0.268\,k) \\ ans.5 = (c = -1.789\,i + 4.472\,j - 1.342\,k) \\ ans.6 = (d = 3.220\,i - 8.050\,j + 2.415\,k) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} ans.1 = (AB = < 18, 6, -3 >) \\ ans.2 = (AB = 18\,i + 6\,j - 3\,k) \\ ans.3 = (|AB| = (3\sqrt{41}, 19.209)) \\ ans.4 = (u = 0.937\,i + 0.312\,j - 0.156\,k) \\ ans.5 = (c = 6.559\,i + 2.186\,j - 1.093\,k) \\ ans.6 = (d = -4.685\,i - 1.562\,j + 0.781\,k) \end{bmatrix}$$

$$Ans5 = < 16, 18 >, \quad , Ans6 = < 18, -21 >, \quad , Ans7 = < 17, 39, -23 >, \quad , Ans8 = < -4, 34, 2 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [10, 10.000]] \\ ans.2 = \begin{bmatrix} b = < 24, 32 > \\ |b| = [40, 40.000] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -18, -24 > \\ |c| = [30, 30.000] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < -3, 17 > \\ |a| = [\sqrt{74}, 8.602] \\ |b| = [2\sqrt{41}, 12.806] \\ |a + b| = [\sqrt{298}, 17.263] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 13, -3 > \\ |a| = [\sqrt{74}, 8.602] \\ |b| = [2\sqrt{41}, 12.806] \\ |a - b| = [\sqrt{178}, 13.342] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 7, -18, -18 > \\ |a| = [\sqrt{218}, 14.765] \\ |b| = [\sqrt{301}, 17.349] \\ |a + b| = [\sqrt{697}, 26.401] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -17, -6, 4 > \\ |a| = [\sqrt{218}, 14.765] \\ |b| = [\sqrt{301}, 17.349] \\ |a - b| = [\sqrt{341}, 18.466] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{145}, 12.042]) \\ ans.3 = (\theta = 41.634\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 330.945\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645108

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < 4 , -8 >) \\ ans.3 = (AB = 4\,i - 8\,j) \\ ans.4 = (|AB| = (4\sqrt{5}, 8.944)) \\ ans.5 = (u = 0.447\,i - 0.894\,j) \\ ans.6 = (c = 3.130\,i - 6.261\,j) \\ ans.7 = (d = -2.683\,i + 5.367\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 10 , -3 >) \\ ans.3 = (AB = 10\,i - 3\,j) \\ ans.4 = (|AB| = (\sqrt{109}, 10.440)) \\ ans.5 = (u = 0.958\,i - 0.287\,j) \\ ans.6 = (c = 6.705\,i - 2.011\,j) \\ ans.7 = (d = -4.789\,i + 1.437\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 3 , 5 , 4 >) \\ ans.2 = (AB = 3\,i + 5\,j + 4\,k) \\ ans.3 = (|AB| = (5\sqrt{2}, 7.071)) \\ ans.4 = (u = 0.424\,i + 0.707\,j + 0.566\,k) \\ ans.5 = (c = 2.121\,i + 3.536\,j + 2.828\,k) \\ ans.6 = (d = -2.970\,i - 4.950\,j - 3.960\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 18 , 12 , 10 >) \\ ans.2 = (AB = 18\,i + 12\,j + 10\,k) \\ ans.3 = (|AB| = (2\sqrt{142}, 23.833)) \\ ans.4 = (u = 0.755\,i + 0.504\,j + 0.420\,k) \\ ans.5 = (c = 6.797\,i + 4.532\,j + 3.776\,k) \\ ans.6 = (d = -5.287\,i - 3.525\,j - 2.937\,k) \end{bmatrix}$$

$$Ans5 = < -15 , 20 >, \quad , Ans6 = < -4 , -26 >, \quad , Ans7 = < 19 , -21 , 25 >, \quad , Ans8 = < 31 , 1 , -55 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{74}, 8.602]] \\ ans.2 = \begin{bmatrix} b = < 28 , -20 > \\ |b| = [4\sqrt{74}, 34.409] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -49 , 35 > \\ |c| = [7\sqrt{74}, 60.216] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < -4 , 18 > \\ |a| = [\sqrt{146}, 12.083] \\ |b| = [\sqrt{130}, 11.402] \\ |a + b| = [2\sqrt{85}, 18.439] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 14 , 4 > \\ |a| = [\sqrt{146}, 12.083] \\ |b| = [\sqrt{130}, 11.402] \\ |a - b| = [2\sqrt{53}, 14.560] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 19 , -1 , 19 > \\ |a| = [\sqrt{269}, 16.401] \\ |b| = [\sqrt{286}, 16.912] \\ |a + b| = [\sqrt{723}, 26.889] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -7 , 17 , 7 > \\ |a| = [\sqrt{269}, 16.401] \\ |b| = [\sqrt{286}, 16.912] \\ |a - b| = [3\sqrt{43}, 19.672] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 57.995\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 318.814\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645109

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -5 , -6 >) \\ ans.3 = (AB = -5\, i - 6\, j) \\ ans.4 = (|AB| = (\sqrt{61} , 7.810)) \\ ans.5 = (u = -0.640\, i - 0.768\, j) \\ ans.6 = (c = -4.481\, i - 5.378\, j) \\ ans.7 = (d = 3.841\, i + 4.609\, j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 15 , -5 >) \\ ans.3 = (AB = 15\, i - 5\, j) \\ ans.4 = (|AB| = (5\sqrt{10} , 15.811)) \\ ans.5 = (u = 0.949\, i - 0.316\, j) \\ ans.6 = (c = 7.589\, i - 2.530\, j) \\ ans.7 = (d = -4.743\, i + 1.581\, j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -7 , 6 , -7 >) \\ ans.2 = (AB = -7\, i + 6\, j - 7\, k) \\ ans.3 = (|AB| = (\sqrt{134} , 11.576)) \\ ans.4 = (u = -0.605\, i + 0.518\, j - 0.605\, k) \\ ans.5 = (c = -4.233\, i + 3.628\, j - 4.233\, k) \\ ans.6 = (d = 4.838\, i - 4.147\, j + 4.838\, k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 8 , -4 , 9 >) \\ ans.2 = (AB = 8\, i - 4\, j + 9\, k) \\ ans.3 = (|AB| = (\sqrt{161} , 12.689)) \\ ans.4 = (u = 0.630\, i - 0.315\, j + 0.709\, k) \\ ans.5 = (c = 5.044\, i - 2.522\, j + 5.674\, k) \\ ans.6 = (d = -5.674\, i + 2.837\, j - 6.384\, k) \end{bmatrix}$$

$$Ans5 = < -23 , -4 >, \quad , Ans6 = < -12 , -19 >, \quad , Ans7 = < 27 , 33 , -31 >, \quad , Ans8 = < 29 , 29 , 33 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{74} , 8.602]] \\ ans.2 = \begin{bmatrix} b = < -28 , -20 > \\ |b| = [4\sqrt{74} , 34.409] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 35 , 25 > \\ |c| = [5\sqrt{74} , 43.012] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 14 , 8 > \\ |a| = [\sqrt{106} , 10.296] \\ |b| = [\sqrt{194} , 13.928] \\ |a + b| = [2\sqrt{65} , 16.125] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 4 , -18 > \\ |a| = [\sqrt{106} , 10.296] \\ |b| = [\sqrt{194} , 13.928] \\ |a - b| = [2\sqrt{85} , 18.439] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -17 , 5 , -2 > \\ |a| = [3\sqrt{22} , 14.071] \\ |b| = [3\sqrt{26} , 15.297] \\ |a + b| = [\sqrt{318} , 17.833] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -1 , -17 , -16 > \\ |a| = [3\sqrt{22} , 14.071] \\ |b| = [3\sqrt{26} , 15.297] \\ |a - b| = [\sqrt{546} , 23.367] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61} , 7.810]) \\ ans.3 = (\theta = 50.194\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106} , 10.296]) \\ ans.3 = (\theta = 119.055\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645110

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <-7, -5>) \\ ans.3 = (AB = -7\,i - 5\,j) \\ ans.4 = (|AB| = (\sqrt{74}, 8.602)) \\ ans.5 = (u = -0.814\,i - 0.581\,j) \\ ans.6 = (c = -6.510\,i - 4.650\,j) \\ ans.7 = (d = 4.069\,i + 2.906\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <-13, -3>) \\ ans.3 = (AB = -13\,i - 3\,j) \\ ans.4 = (|AB| = (\sqrt{178}, 13.342)) \\ ans.5 = (u = -0.974\,i - 0.225\,j) \\ ans.6 = (c = -4.872\,i - 1.124\,j) \\ ans.7 = (d = 7.795\,i + 1.799\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <6, 4, -4>) \\ ans.2 = (AB = 6\,i + 4\,j - 4\,k) \\ ans.3 = (|AB| = (2\sqrt{17}, 8.246)) \\ ans.4 = (u = 0.728\,i + 0.485\,j - 0.485\,k) \\ ans.5 = (c = 5.093\,i + 3.395\,j - 3.395\,k) \\ ans.6 = (d = -3.638\,i - 2.425\,j + 2.425\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-8, 7, 3>) \\ ans.2 = (AB = -8\,i + 7\,j + 3\,k) \\ ans.3 = (|AB| = (\sqrt{122}, 11.045)) \\ ans.4 = (u = -0.724\,i + 0.634\,j + 0.272\,k) \\ ans.5 = (c = -5.794\,i + 5.070\,j + 2.173\,k) \\ ans.6 = (d = 5.070\,i - 4.436\,j - 1.901\,k) \end{bmatrix}$$

$$Ans5 = <8, 3>, \quad , Ans6 = <17, -21>, \quad , Ans7 = <38, -15, 43>, \quad , Ans8 = <-4, 12, -5>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{145}, 12.042]] \\ ans.2 = \begin{bmatrix} b = <56, 63> \\ |b| = [7\sqrt{145}, 84.291] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-40, -45> \\ |c| = [5\sqrt{145}, 60.208] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <5, 18> \\ |a| = [\sqrt{170}, 13.038] \\ |b| = [\sqrt{193}, 13.892] \\ |a + b| = [\sqrt{349}, 18.682] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-19, 4> \\ |a| = [\sqrt{170}, 13.038] \\ |b| = [\sqrt{193}, 13.892] \\ |a - b| = [\sqrt{377}, 19.416] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-19, 5, 11> \\ |a| = [2\sqrt{43}, 13.115] \\ |b| = [\sqrt{227}, 15.067] \\ |a + b| = [13\sqrt{3}, 22.517] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <-1, -17, 1> \\ |a| = [2\sqrt{43}, 13.115] \\ |b| = [\sqrt{227}, 15.067] \\ |a - b| = [\sqrt{291}, 17.059] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 37.875 \text{ degrees}) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 232.125 \text{ degrees}) \end{bmatrix}$$

Tutorial01 Answers for No.645111

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -9 , 10 >) \\ ans.3 = (AB = -9\,i + 10\,j) \\ ans.4 = (|AB| = (\sqrt{181}, 13.454)) \\ ans.5 = (u = -0.669\,i + 0.743\,j) \\ ans.6 = (c = -6.021\,i + 6.690\,j) \\ ans.7 = (d = 4.014\,i - 4.460\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 6 , 3 >) \\ ans.3 = (AB = 6\,i + 3\,j) \\ ans.4 = (|AB| = (3\sqrt{5}, 6.708)) \\ ans.5 = (u = 0.894\,i + 0.447\,j) \\ ans.6 = (c = 7.155\,i + 3.578\,j) \\ ans.7 = (d = -6.261\,i - 3.130\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 3 , -9 , 10 >) \\ ans.2 = (AB = 3\,i - 9\,j + 10\,k) \\ ans.3 = (|AB| = (\sqrt{190}, 13.784)) \\ ans.4 = (u = 0.218\,i - 0.653\,j + 0.725\,k) \\ ans.5 = (c = 1.306\,i - 3.918\,j + 4.353\,k) \\ ans.6 = (d = -1.959\,i + 5.876\,j - 6.529\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 9 , -14 , 6 >) \\ ans.2 = (AB = 9\,i - 14\,j + 6\,k) \\ ans.3 = (|AB| = (\sqrt{313}, 17.692)) \\ ans.4 = (u = 0.509\,i - 0.791\,j + 0.339\,k) \\ ans.5 = (c = 3.052\,i - 4.748\,j + 2.035\,k) \\ ans.6 = (d = -2.544\,i + 3.957\,j - 1.696\,k) \end{bmatrix}$$

$$Ans5 = < 5 , 2 >, \quad , Ans6 = < -24 , -23 >, \quad , Ans7 = < 33 , -52 , -6 >, \quad , Ans8 = < 26 , 13 , 34 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{74}, 8.602]] \\ ans.2 = \begin{bmatrix} b = < -25 , 35 > \\ |b| = [5\sqrt{74}, 43.012] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 15 , -21 > \\ |c| = [3\sqrt{74}, 25.807] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 16 , 5 > \\ |a| = [\sqrt{202}, 14.213] \\ |b| = [\sqrt{85}, 9.220] \\ |a + b| = [\sqrt{281}, 16.763] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 2 , 17 > \\ |a| = [\sqrt{202}, 14.213] \\ |b| = [\sqrt{85}, 9.220] \\ |a - b| = [\sqrt{293}, 17.117] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 4 , -17 , -3 > \\ |a| = [2\sqrt{41}, 12.806] \\ |b| = [\sqrt{302}, 17.378] \\ |a + b| = [\sqrt{314}, 17.720] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -16 , 1 , 19 > \\ |a| = [2\sqrt{41}, 12.806] \\ |b| = [\sqrt{302}, 17.378] \\ |a - b| = [\sqrt{618}, 24.860] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 49.399\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 311.186\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645112

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < 5, -4 >) \\ ans.3 = (AB = 5\,i - 4\,j) \\ ans.4 = (|AB| = (\sqrt{41}, 6.403)) \\ ans.5 = (u = 0.781\,i - 0.625\,j) \\ ans.6 = (c = 5.466\,i - 4.373\,j) \\ ans.7 = (d = -3.904\,i + 3.123\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 5, 11 >) \\ ans.3 = (AB = 5\,i + 11\,j) \\ ans.4 = (|AB| = (\sqrt{146}, 12.083)) \\ ans.5 = (u = 0.414\,i + 0.910\,j) \\ ans.6 = (c = 3.310\,i + 7.283\,j) \\ ans.7 = (d = -2.897\,i - 6.373\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 3, -7, -4 >) \\ ans.2 = (AB = 3\,i - 7\,j - 4\,k) \\ ans.3 = (|AB| = (\sqrt{74}, 8.602)) \\ ans.4 = (u = 0.349\,i - 0.814\,j - 0.465\,k) \\ ans.5 = (c = 3.139\,i - 7.324\,j - 4.185\,k) \\ ans.6 = (d = -1.744\,i + 4.069\,j + 2.325\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -9, 4, 12 >) \\ ans.2 = (AB = -9\,i + 4\,j + 12\,k) \\ ans.3 = (|AB| = (\sqrt{241}, 15.524)) \\ ans.4 = (u = -0.580\,i + 0.258\,j + 0.773\,k) \\ ans.5 = (c = -3.478\,i + 1.546\,j + 4.638\,k) \\ ans.6 = (d = 4.638\,i - 2.061\,j - 6.184\,k) \end{bmatrix}$$

$$Ans5 = < -49, -13 >, \quad , Ans6 = < -55, -42 >, \quad , Ans7 = < 0, -46, -52 >, \quad , Ans8 = < 7, 20, -13 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{145}, 12.042]] \\ ans.2 = \begin{bmatrix} b = < 45, -40 > \\ |b| = [5\sqrt{145}, 60.208] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -27, 24 > \\ |c| = [3\sqrt{145}, 36.125] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < -3, 20 > \\ |a| = [\sqrt{202}, 14.213] \\ |b| = [3\sqrt{13}, 10.817] \\ |a + b| = [\sqrt{409}, 20.224] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -15, 2 > \\ |a| = [\sqrt{202}, 14.213] \\ |b| = [3\sqrt{13}, 10.817] \\ |a - b| = [\sqrt{229}, 15.133] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 7, -16, -7 > \\ |a| = [\sqrt{394}, 19.849] \\ |b| = [\sqrt{110}, 10.488] \\ |a + b| = [\sqrt{354}, 18.815] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 17, -2, -19 > \\ |a| = [\sqrt{394}, 19.849] \\ |b| = [\sqrt{110}, 10.488] \\ |a - b| = [\sqrt{654}, 25.573] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 50.194\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{74}, 8.602]) \\ ans.3 = (\theta = 144.462\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645113

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -7 , -6 >) \\ ans.3 = (AB = -7\,i - 6\,j) \\ ans.4 = (|AB| = (\sqrt{85}, 9.220)) \\ ans.5 = (u = -0.759\,i - 0.651\,j) \\ ans.6 = (c = -6.074\,i - 5.206\,j) \\ ans.7 = (d = 4.556\,i + 3.905\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 7 , 3 >) \\ ans.3 = (AB = 7\,i + 3\,j) \\ ans.4 = (|AB| = (\sqrt{58}, 7.616)) \\ ans.5 = (u = 0.919\,i + 0.394\,j) \\ ans.6 = (c = 6.434\,i + 2.757\,j) \\ ans.7 = (d = -7.353\,i - 3.151\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -3 , 6 , 4 >) \\ ans.2 = (AB = -3\,i + 6\,j + 4\,k) \\ ans.3 = (|AB| = (\sqrt{61}, 7.810)) \\ ans.4 = (u = -0.384\,i + 0.768\,j + 0.512\,k) \\ ans.5 = (c = -2.305\,i + 4.609\,j + 3.073\,k) \\ ans.6 = (d = 3.073\,i - 6.146\,j - 4.097\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 14 , 6 , -3 >) \\ ans.2 = (AB = 14\,i + 6\,j - 3\,k) \\ ans.3 = (|AB| = (\sqrt{241}, 15.524)) \\ ans.4 = (u = 0.902\,i + 0.386\,j - 0.193\,k) \\ ans.5 = (c = 7.215\,i + 3.092\,j - 1.546\,k) \\ ans.6 = (d = -5.411\,i - 2.319\,j + 1.159\,k) \end{bmatrix}$$

$$Ans5 = < -30 , -10 >, \quad , Ans6 = < 22 , -1 >, \quad , Ans7 = < 12 , 3 , 26 >, \quad , Ans8 = < 8 , 6 , -28 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [3\sqrt{13}, 10.817]] \\ ans.2 = \begin{bmatrix} b = < 54 , 36 > \\ |b| = [18\sqrt{13}, 64.900] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -63 , -42 > \\ |c| = [21\sqrt{13}, 75.717] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 16 , 2 > \\ |a| = [10, 10.000] \\ |b| = [2\sqrt{34}, 11.662] \\ |a + b| = [2\sqrt{65}, 16.125] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -4 , 14 > \\ |a| = [10, 10.000] \\ |b| = [2\sqrt{34}, 11.662] \\ |a - b| = [2\sqrt{53}, 14.560] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -16 , 18 , 0 > \\ |a| = [\sqrt{161}, 12.689] \\ |b| = [3\sqrt{41}, 19.209] \\ |a + b| = [2\sqrt{145}, 24.083] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 4 , -8 , 20 > \\ |a| = [\sqrt{161}, 12.689] \\ |b| = [3\sqrt{41}, 19.209] \\ |a - b| = [4\sqrt{30}, 21.909] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 29.055\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 230.194\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645114

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < 8 , -6 >) \\ ans.3 = (AB = 8\,i - 6\,j) \\ ans.4 = (\left|AB\right| = (10, 10.000)) \\ ans.5 = (u = 0.800\,i - 0.600\,j) \\ ans.6 = (c = 4.000\,i - 3.000\,j) \\ ans.7 = (d = -7.200\,i + 5.400\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 9 , 7 >) \\ ans.3 = (AB = 9\,i + 7\,j) \\ ans.4 = (\left|AB\right| = (\sqrt{130}, 11.402)) \\ ans.5 = (u = 0.789\,i + 0.614\,j) \\ ans.6 = (c = 4.736\,i + 3.684\,j) \\ ans.7 = (d = -5.525\,i - 4.298\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -4 , -4 , 6 >) \\ ans.2 = (AB = -4\,i - 4\,j + 6\,k) \\ ans.3 = (\left|AB\right| = (2\sqrt{17}, 8.246)) \\ ans.4 = (u = -0.485\,i - 0.485\,j + 0.728\,k) \\ ans.5 = (c = -3.395\,i - 3.395\,j + 5.093\,k) \\ ans.6 = (d = 3.881\,i + 3.881\,j - 5.821\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -3 , 13 , -4 >) \\ ans.2 = (AB = -3\,i + 13\,j - 4\,k) \\ ans.3 = (\left|AB\right| = (\sqrt{194}, 13.928)) \\ ans.4 = (u = -0.215\,i + 0.933\,j - 0.287\,k) \\ ans.5 = (c = -1.077\,i + 4.667\,j - 1.436\,k) \\ ans.6 = (d = 1.723\,i - 7.467\,j + 2.297\,k) \end{bmatrix}$$

$$Ans5 = < -35 , -52 >, \quad , Ans6 = < 15 , -7 >, \quad , Ans7 = < 23 , -24 , -23 >, \quad , Ans8 = < -45 , -38 , 28 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [\left|a\right| = [\sqrt{130}, 11.402]] \\ ans.2 = \begin{bmatrix} b = < -54 , -42 > \\ \left|b\right| = [6\sqrt{130}, 68.411] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 45 , 35 > \\ \left|c\right| = [5\sqrt{130}, 57.009] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 18 , 7 > \\ \left|a\right| = [\sqrt{157}, 12.530] \\ \left|b\right| = [\sqrt{218}, 14.765] \\ \left|a + b\right| = [\sqrt{373}, 19.313] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 4 , -19 > \\ \left|a\right| = [\sqrt{157}, 12.530] \\ \left|b\right| = [\sqrt{218}, 14.765] \\ \left|a - b\right| = [\sqrt{377}, 19.416] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -19 , -1 , -5 > \\ \left|a\right| = [\sqrt{213}, 14.595] \\ \left|b\right| = [\sqrt{274}, 16.553] \\ \left|a + b\right| = [3\sqrt{43}, 19.672] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -1 , -15 , 19 > \\ \left|a\right| = [\sqrt{213}, 14.595] \\ \left|b\right| = [\sqrt{274}, 16.553] \\ \left|a - b\right| = [\sqrt{587}, 24.228] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (\left|a\right| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 39.806\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (\left|a\right| = [\sqrt{74}, 8.602]) \\ ans.3 = (\theta = 324.462\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645115

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -4 , -3 >) \\ ans.3 = (AB = -4\ i - 3\ j) \\ ans.4 = (|AB| = (5, 5.000)) \\ ans.5 = (u = -0.800\ i - 0.600\ j) \\ ans.6 = (c = -6.400\ i - 4.800\ j) \\ ans.7 = (d = 7.200\ i + 5.400\ j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -8 , 10 >) \\ ans.3 = (AB = -8\ i + 10\ j) \\ ans.4 = (|AB| = (2\sqrt{41}, 12.806)) \\ ans.5 = (u = -0.625\ i + 0.781\ j) \\ ans.6 = (c = -3.123\ i + 3.904\ j) \\ ans.7 = (d = 3.748\ i - 4.685\ j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -3 , 6 , 6 >) \\ ans.2 = (AB = -3\ i + 6\ j + 6\ k) \\ ans.3 = (|AB| = (9, 9.000)) \\ ans.4 = (u = -0.333\ i + 0.667\ j + 0.667\ k) \\ ans.5 = (c = -2.333\ i + 4.667\ j + 4.667\ k) \\ ans.6 = (d = 3.000\ i - 6.000\ j - 6.000\ k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -5 , 8 , -15 >) \\ ans.2 = (AB = -5\ i + 8\ j - 15\ k) \\ ans.3 = (|AB| = (\sqrt{314}, 17.720)) \\ ans.4 = (u = -0.282\ i + 0.451\ j - 0.846\ k) \\ ans.5 = (c = -1.975\ i + 3.160\ j - 5.925\ k) \\ ans.6 = (d = 2.539\ i - 4.063\ j + 7.618\ k) \end{bmatrix}$$

$$Ans5 = < 2 , -8 >, \quad , Ans6 = < 14 , -40 >, \quad , Ans7 = < -18 , 36 , -28 >, \quad , Ans8 = < -34 , -21 , 41 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{61}, 7.810]] \\ ans.2 = \begin{bmatrix} b = < 30 , -25 > \\ |b| = [5\sqrt{61}, 39.051] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -24 , 20 > \\ |c| = [4\sqrt{61}, 31.241] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 19 , -3 > \\ |a| = [\sqrt{113}, 10.630] \\ |b| = [\sqrt{221}, 14.866] \\ |a + b| = [\sqrt{370}, 19.235] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -3 , 17 > \\ |a| = [\sqrt{113}, 10.630] \\ |b| = [\sqrt{221}, 14.866] \\ |a - b| = [\sqrt{298}, 17.263] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -11 , 18 , 1 > \\ |a| = [2\sqrt{70}, 16.733] \\ |b| = [\sqrt{142}, 11.916] \\ |a + b| = [\sqrt{446}, 21.119] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -1 , 6 , 19 > \\ |a| = [2\sqrt{70}, 16.733] \\ |b| = [\sqrt{142}, 11.916] \\ |a - b| = [\sqrt{398}, 19.950] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 60.945\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 139.399\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645116

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <4, -5>) \\ ans.3 = (AB = 4\,i - 5\,j) \\ ans.4 = (|AB| = (\sqrt{41}, 6.403)) \\ ans.5 = (u = 0.625\,i - 0.781\,j) \\ ans.6 = (c = 4.373\,i - 5.466\,j) \\ ans.7 = (d = -3.748\,i + 4.685\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <3, -9>) \\ ans.3 = (AB = 3\,i - 9\,j) \\ ans.4 = (|AB| = (3\sqrt{10}, 9.487)) \\ ans.5 = (u = 0.316\,i - 0.949\,j) \\ ans.6 = (c = 2.530\,i - 7.589\,j) \\ ans.7 = (d = -2.214\,i + 6.641\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <4, 6, 7>) \\ ans.2 = (AB = 4\,i + 6\,j + 7\,k) \\ ans.3 = (|AB| = (\sqrt{101}, 10.050)) \\ ans.4 = (u = 0.398\,i + 0.597\,j + 0.697\,k) \\ ans.5 = (c = 2.388\,i + 3.582\,j + 4.179\,k) \\ ans.6 = (d = -1.990\,i - 2.985\,j - 3.483\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-9, 3, -13>) \\ ans.2 = (AB = -9\,i + 3\,j - 13\,k) \\ ans.3 = (|AB| = (\sqrt{259}, 16.093)) \\ ans.4 = (u = -0.559\,i + 0.186\,j - 0.808\,k) \\ ans.5 = (c = -3.355\,i + 1.118\,j - 4.847\,k) \\ ans.6 = (d = 4.474\,i - 1.491\,j + 6.462\,k) \end{bmatrix}$$

$$Ans5 = <-12, -39>, \quad , Ans6 = <3, -58>, \quad , Ans7 = <-18, 18, -9>, \quad , Ans8 = <12, -10, -12>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{145}, 12.042]] \\ ans.2 = \begin{bmatrix} b = <48, 54> \\ |b| = [6\sqrt{145}, 72.250] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-24, -27> \\ |c| = [3\sqrt{145}, 36.125] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <12, 6> \\ |a| = [\sqrt{85}, 9.220] \\ |b| = [13, 13.000] \\ |a + b| = [6\sqrt{5}, 13.416] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <2, -18> \\ |a| = [\sqrt{85}, 9.220] \\ |b| = [13, 13.000] \\ |a - b| = [2\sqrt{82}, 18.111] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-12, -13, 2> \\ |a| = [3\sqrt{11}, 9.950] \\ |b| = [\sqrt{134}, 11.576] \\ |a + b| = [\sqrt{317}, 17.804] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <2, -1, -12> \\ |a| = [3\sqrt{11}, 9.950] \\ |b| = [\sqrt{134}, 11.576] \\ |a - b| = [\sqrt{149}, 12.207] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{74}, 8.602]) \\ ans.3 = (\theta = 54.462\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 142.125\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645117

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <4, -3>) \\ ans.3 = (AB = 4\,i - 3\,j) \\ ans.4 = (|AB| = (5, 5.000)) \\ ans.5 = (u = 0.800\,i - 0.600\,j) \\ ans.6 = (c = 4.000\,i - 3.000\,j) \\ ans.7 = (d = -6.400\,i + 4.800\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <5, -11>) \\ ans.3 = (AB = 5\,i - 11\,j) \\ ans.4 = (|AB| = (\sqrt{146}, 12.083)) \\ ans.5 = (u = 0.414\,i - 0.910\,j) \\ ans.6 = (c = 2.897\,i - 6.373\,j) \\ ans.7 = (d = -3.724\,i + 8.193\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-4, 9, -5>) \\ ans.2 = (AB = -4\,i + 9\,j - 5\,k) \\ ans.3 = (|AB| = (\sqrt{122}, 11.045)) \\ ans.4 = (u = -0.362\,i + 0.815\,j - 0.453\,k) \\ ans.5 = (c = -2.535\,i + 5.704\,j - 3.169\,k) \\ ans.6 = (d = 1.811\,i - 4.074\,j + 2.263\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-14, 10, -5>) \\ ans.2 = (AB = -14\,i + 10\,j - 5\,k) \\ ans.3 = (|AB| = (\sqrt{321}, 17.916)) \\ ans.4 = (u = -0.781\,i + 0.558\,j - 0.279\,k) \\ ans.5 = (c = -7.033\,i + 5.023\,j - 2.512\,k) \\ ans.6 = (d = 6.251\,i - 4.465\,j + 2.233\,k) \end{bmatrix}$$

$$Ans5 = <11, 47>, \quad , Ans6 = <-27, 20>, \quad , Ans7 = <20, 6, 4>, \quad , Ans8 = <-34, -24, 10>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{74}, 8.602]] \\ ans.2 = \begin{bmatrix} b = <30, 42> \\ |b| = [6\sqrt{74}, 51.614] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-35, -49> \\ |c| = [7\sqrt{74}, 60.216] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <18, -8> \\ |a| = [13, 13.000] \\ |b| = [\sqrt{205}, 14.318] \\ |a + b| = [2\sqrt{97}, 19.698] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <6, 18> \\ |a| = [13, 13.000] \\ |b| = [\sqrt{205}, 14.318] \\ |a - b| = [6\sqrt{10}, 18.974] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-16, -1, -17> \\ |a| = [3\sqrt{34}, 17.493] \\ |b| = [\sqrt{110}, 10.488] \\ |a + b| = [\sqrt{546}, 23.367] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <-6, -15, -5> \\ |a| = [3\sqrt{34}, 17.493] \\ |b| = [\sqrt{110}, 10.488] \\ |a - b| = [\sqrt{286}, 16.912] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{145}, 12.042]) \\ ans.3 = (\theta = 41.634\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{74}, 8.602]) \\ ans.3 = (\theta = 125.538\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645118

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < 3 , -3 >) \\ ans.3 = (AB = 3\,i - 3\,j) \\ ans.4 = (|AB| = (3\sqrt{2}, 4.243)) \\ ans.5 = (u = 0.707\,i - 0.707\,j) \\ ans.6 = (c = 4.950\,i - 4.950\,j) \\ ans.7 = (d = -4.243\,i + 4.243\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -10 , 5 >) \\ ans.3 = (AB = -10\,i + 5\,j) \\ ans.4 = (|AB| = (5\sqrt{5}, 11.180)) \\ ans.5 = (u = -0.894\,i + 0.447\,j) \\ ans.6 = (c = -7.155\,i + 3.578\,j) \\ ans.7 = (d = 5.367\,i - 2.683\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 6 , -4 , -6 >) \\ ans.2 = (AB = 6\,i - 4\,j - 6\,k) \\ ans.3 = (|AB| = (2\sqrt{22}, 9.381)) \\ ans.4 = (u = 0.640\,i - 0.426\,j - 0.640\,k) \\ ans.5 = (c = 5.756\,i - 3.838\,j - 5.756\,k) \\ ans.6 = (d = -4.477\,i + 2.985\,j + 4.477\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -5 , -6 , -15 >) \\ ans.2 = (AB = -5\,i - 6\,j - 15\,k) \\ ans.3 = (|AB| = (\sqrt{286}, 16.912)) \\ ans.4 = (u = -0.296\,i - 0.355\,j - 0.887\,k) \\ ans.5 = (c = -1.774\,i - 2.129\,j - 5.322\,k) \\ ans.6 = (d = 2.365\,i + 2.838\,j + 7.096\,k) \end{bmatrix}$$

$$Ans5 = < -56 , -53 >, \quad , Ans6 = < -32 , 43 >, \quad , Ans7 = < -14 , -6 , 1 >, \quad , Ans8 = < -70 , 59 , 42 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{74}, 8.602]] \\ ans.2 = \begin{bmatrix} b = < 49 , -35 > \\ |b| = [7\sqrt{74}, 60.216] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -42 , 30 > \\ |c| = [6\sqrt{74}, 51.614] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 14 , -5 > \\ |a| = [\sqrt{61}, 7.810] \\ |b| = [2\sqrt{41}, 12.806] \\ |a + b| = [\sqrt{221}, 14.866] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -2 , 15 > \\ |a| = [\sqrt{61}, 7.810] \\ |b| = [2\sqrt{41}, 12.806] \\ |a - b| = [\sqrt{229}, 15.133] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 13 , -7 , 2 > \\ |a| = [\sqrt{205}, 14.318] \\ |b| = [3\sqrt{17}, 12.369] \\ |a + b| = [\sqrt{222}, 14.900] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -3 , -17 , -14 > \\ |a| = [\sqrt{205}, 14.318] \\ |b| = [3\sqrt{17}, 12.369] \\ |a - b| = [\sqrt{494}, 22.226] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 50.194\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 217.875\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645119

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <-6, -7>) \\ ans.3 = (AB = -6\,i - 7\,j) \\ ans.4 = (|AB| = (\sqrt{85}, 9.220)) \\ ans.5 = (u = -0.651\,i - 0.759\,j) \\ ans.6 = (c = -4.556\,i - 5.315\,j) \\ ans.7 = (d = 3.254\,i + 3.796\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <-6, 7>) \\ ans.3 = (AB = -6\,i + 7\,j) \\ ans.4 = (|AB| = (\sqrt{85}, 9.220)) \\ ans.5 = (u = -0.651\,i + 0.759\,j) \\ ans.6 = (c = -5.857\,i + 6.833\,j) \\ ans.7 = (d = 4.556\,i - 5.315\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-4, 4, -7>) \\ ans.2 = (AB = -4\,i + 4\,j - 7\,k) \\ ans.3 = (|AB| = (9, 9.000)) \\ ans.4 = (u = -0.444\,i + 0.444\,j - 0.778\,k) \\ ans.5 = (c = -4.000\,i + 4.000\,j - 7.000\,k) \\ ans.6 = (d = 3.556\,i - 3.556\,j + 6.222\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-3, 14, -5>) \\ ans.2 = (AB = -3\,i + 14\,j - 5\,k) \\ ans.3 = (|AB| = (\sqrt{230}, 15.166)) \\ ans.4 = (u = -0.198\,i + 0.923\,j - 0.330\,k) \\ ans.5 = (c = -1.780\,i + 8.308\,j - 2.967\,k) \\ ans.6 = (d = 1.385\,i - 6.462\,j + 2.308\,k) \end{bmatrix}$$

$$Ans5 = <0, 23>, \quad , Ans6 = <-38, -11>, \quad , Ans7 = <15, -24, 29>, \quad , Ans8 = <-46, -10, -31>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [10, 10.000]] \\ ans.2 = \begin{bmatrix} b = <18, 24> \\ |b| = [30, 30.000] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-42, -56> \\ |c| = [70, 70.000] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <18, -5> \\ |a| = [13, 13.000] \\ |b| = [2\sqrt{34}, 11.662] \\ |a + b| = [\sqrt{349}, 18.682] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <6, 15> \\ |a| = [13, 13.000] \\ |b| = [2\sqrt{34}, 11.662] \\ |a - b| = [3\sqrt{29}, 16.155] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <0, -13, 19> \\ |a| = [\sqrt{123}, 11.091] \\ |b| = [\sqrt{205}, 14.318] \\ |a + b| = [\sqrt{530}, 23.022] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <10, -1, -5> \\ |a| = [\sqrt{123}, 11.091] \\ |b| = [\sqrt{205}, 14.318] \\ |a - b| = [3\sqrt{14}, 11.225] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 29.055\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 237.995\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.645120

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <6, -3>) \\ ans.3 = (AB = 6\,i - 3\,j) \\ ans.4 = (|AB| = (3\sqrt{5}, 6.708)) \\ ans.5 = (u = 0.894\,i - 0.447\,j) \\ ans.6 = (c = 4.472\,i - 2.236\,j) \\ ans.7 = (d = -7.155\,i + 3.578\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <7, -3>) \\ ans.3 = (AB = 7\,i - 3\,j) \\ ans.4 = (|AB| = (\sqrt{58}, 7.616)) \\ ans.5 = (u = 0.919\,i - 0.394\,j) \\ ans.6 = (c = 7.353\,i - 3.151\,j) \\ ans.7 = (d = -8.272\,i + 3.545\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-5, -5, 3>) \\ ans.2 = (AB = -5\,i - 5\,j + 3\,k) \\ ans.3 = (|AB| = (\sqrt{59}, 7.681)) \\ ans.4 = (u = -0.651\,i - 0.651\,j + 0.391\,k) \\ ans.5 = (c = -3.906\,i - 3.906\,j + 2.343\,k) \\ ans.6 = (d = 5.208\,i + 5.208\,j - 3.125\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <4, -12, -17>) \\ ans.2 = (AB = 4\,i - 12\,j - 17\,k) \\ ans.3 = (|AB| = (\sqrt{449}, 21.190)) \\ ans.4 = (u = 0.189\,i - 0.566\,j - 0.802\,k) \\ ans.5 = (c = 1.133\,i - 3.398\,j - 4.814\,k) \\ ans.6 = (d = -1.321\,i + 3.964\,j + 5.616\,k) \end{bmatrix}$$

$$Ans5 = <57, 28>, \quad , Ans6 = <-12, -12>, \quad , Ans7 = <-49, 57, 26>, \quad , Ans8 = <-45, -43, 8>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{130}, 11.402]] \\ ans.2 = \begin{bmatrix} b = <27, -21> \\ |b| = [3\sqrt{130}, 34.205] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-54, 42> \\ |c| = [6\sqrt{130}, 68.411] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <-4, 17> \\ |a| = [2\sqrt{61}, 15.620] \\ |b| = [\sqrt{61}, 7.810] \\ |a + b| = [\sqrt{305}, 17.464] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-16, 7> \\ |a| = [2\sqrt{61}, 15.620] \\ |b| = [\sqrt{61}, 7.810] \\ |a - b| = [\sqrt{305}, 17.464] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <-20, -1, -15> \\ |a| = [\sqrt{318}, 17.833] \\ |b| = [\sqrt{138}, 11.747] \\ |a + b| = [\sqrt{626}, 25.020] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <-6, 15, -5> \\ |a| = [\sqrt{318}, 17.833] \\ |b| = [\sqrt{138}, 11.747] \\ |a - b| = [\sqrt{286}, 16.912] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 60.945\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 131.186\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645121

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -3 , 6 >) \\ ans.3 = (AB = -3\,i + 6\,j) \\ ans.4 = (|AB| = (3\sqrt{5}, 6.708)) \\ ans.5 = (u = -0.447\,i + 0.894\,j) \\ ans.6 = (c = -2.683\,i + 5.367\,j) \\ ans.7 = (d = 4.025\,i - 8.050\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 3 , -9 >) \\ ans.3 = (AB = 3\,i - 9\,j) \\ ans.4 = (|AB| = (3\sqrt{10}, 9.487)) \\ ans.5 = (u = 0.316\,i - 0.949\,j) \\ ans.6 = (c = 2.846\,i - 8.538\,j) \\ ans.7 = (d = -1.897\,i + 5.692\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -9 , -7 , -8 >) \\ ans.2 = (AB = -9\,i - 7\,j - 8\,k) \\ ans.3 = (|AB| = (\sqrt{194}, 13.928)) \\ ans.4 = (u = -0.646\,i - 0.503\,j - 0.574\,k) \\ ans.5 = (c = -5.169\,i - 4.021\,j - 4.595\,k) \\ ans.6 = (d = 4.523\,i + 3.518\,j + 4.021\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -5 , -7 , 3 >) \\ ans.2 = (AB = -5\,i - 7\,j + 3\,k) \\ ans.3 = (|AB| = (\sqrt{83}, 9.110)) \\ ans.4 = (u = -0.549\,i - 0.768\,j + 0.329\,k) \\ ans.5 = (c = -4.939\,i - 6.915\,j + 2.964\,k) \\ ans.6 = (d = 4.391\,i + 6.147\,j - 2.634\,k) \end{bmatrix}$$

$$Ans5 = < -12 , -21 >, \quad , Ans6 = < -15 , -2 >, \quad , Ans7 = < 61 , 27 , 30 >, \quad , Ans8 = < -28 , -51 , -38 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [3\sqrt{13}, 10.817]] \\ ans.2 = \begin{bmatrix} b = < 36 , -24 > \\ |b| = [12\sqrt{13}, 43.267] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -63 , 42 > \\ |c| = [21\sqrt{13}, 75.717] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 4 , 19 > \\ |a| = [\sqrt{130}, 11.402] \\ |b| = [13, 13.000] \\ |a + b| = [\sqrt{377}, 19.416] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 14 , -5 > \\ |a| = [\sqrt{130}, 11.402] \\ |b| = [13, 13.000] \\ |a - b| = [\sqrt{221}, 14.866] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 7 , 0 , 3 > \\ |a| = [\sqrt{229}, 15.133] \\ |b| = [\sqrt{155}, 12.450] \\ |a + b| = [\sqrt{58}, 7.616] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 17 , -14 , -15 > \\ |a| = [\sqrt{229}, 15.133] \\ |b| = [\sqrt{155}, 12.450] \\ |a - b| = [\sqrt{710}, 26.646] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 48.814\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 309.806\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.645122

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -4 , -3 >) \\ ans.3 = (AB = -4\,i - 3\,j) \\ ans.4 = (|AB| = (5, 5.000)) \\ ans.5 = (u = -0.800\,i - 0.600\,j) \\ ans.6 = (c = -6.400\,i - 4.800\,j) \\ ans.7 = (d = 4.000\,i + 3.000\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -6 , -10 >) \\ ans.3 = (AB = -6\,i - 10\,j) \\ ans.4 = (|AB| = (2\sqrt{34}, 11.662)) \\ ans.5 = (u = -0.514\,i - 0.857\,j) \\ ans.6 = (c = -4.116\,i - 6.860\,j) \\ ans.7 = (d = 4.630\,i + 7.717\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 4 , -3 , 4 >) \\ ans.2 = (AB = 4\,i - 3\,j + 4\,k) \\ ans.3 = (|AB| = (\sqrt{41}, 6.403)) \\ ans.4 = (u = 0.625\,i - 0.469\,j + 0.625\,k) \\ ans.5 = (c = 3.123\,i - 2.343\,j + 3.123\,k) \\ ans.6 = (d = -4.373\,i + 3.280\,j - 4.373\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -14 , -11 , -8 >) \\ ans.2 = (AB = -14\,i - 11\,j - 8\,k) \\ ans.3 = (|AB| = (\sqrt{381}, 19.519)) \\ ans.4 = (u = -0.717\,i - 0.564\,j - 0.410\,k) \\ ans.5 = (c = -3.586\,i - 2.818\,j - 2.049\,k) \\ ans.6 = (d = 5.738\,i + 4.508\,j + 3.279\,k) \end{bmatrix}$$

$$Ans5 = < -16 , -36 >, \quad , Ans6 = < 36 , 51 >, \quad , Ans7 = < -16 , 11 , -20 >, \quad , Ans8 = < 6 , 20 , 26 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{130}, 11.402]] \\ ans.2 = \begin{bmatrix} b = < 45 , -35 > \\ |b| = [5\sqrt{130}, 57.009] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -36 , 28 > \\ |c| = [4\sqrt{130}, 45.607] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 15 , 2 > \\ |a| = [5\sqrt{5}, 11.180] \\ |b| = [\sqrt{74}, 8.602] \\ |a + b| = [\sqrt{229}, 15.133] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 5 , -12 > \\ |a| = [5\sqrt{5}, 11.180] \\ |b| = [\sqrt{74}, 8.602] \\ |a - b| = [13, 13.000] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -1 , 1 , -1 > \\ |a| = [\sqrt{217}, 14.731] \\ |b| = [\sqrt{170}, 13.038] \\ |a + b| = [\sqrt{3}, 1.732] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -17 , 11 , -19 > \\ |a| = [\sqrt{217}, 14.731] \\ |b| = [\sqrt{170}, 13.038] \\ |a - b| = [\sqrt{771}, 27.767] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 41.186\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 129.806\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.645123

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <7, -4>) \\ ans.3 = (AB = 7\,i - 4\,j) \\ ans.4 = (|AB| = (\sqrt{65}, 8.062)) \\ ans.5 = (u = 0.868\,i - 0.496\,j) \\ ans.6 = (c = 4.341\,i - 2.481\,j) \\ ans.7 = (d = -6.946\,i + 3.969\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <-4, -12>) \\ ans.3 = (AB = -4\,i - 12\,j) \\ ans.4 = (|AB| = (4\sqrt{10}, 12.649)) \\ ans.5 = (u = -0.316\,i - 0.949\,j) \\ ans.6 = (c = -2.530\,i - 7.589\,j) \\ ans.7 = (d = 2.214\,i + 6.641\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <4, -5, 7>) \\ ans.2 = (AB = 4\,i - 5\,j + 7\,k) \\ ans.3 = (|AB| = (3\sqrt{10}, 9.487)) \\ ans.4 = (u = 0.422\,i - 0.527\,j + 0.738\,k) \\ ans.5 = (c = 3.795\,i - 4.743\,j + 6.641\,k) \\ ans.6 = (d = -3.373\,i + 4.216\,j - 5.903\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <3, -6, -10>) \\ ans.2 = (AB = 3\,i - 6\,j - 10\,k) \\ ans.3 = (|AB| = (\sqrt{145}, 12.042)) \\ ans.4 = (u = 0.249\,i - 0.498\,j - 0.830\,k) \\ ans.5 = (c = 1.246\,i - 2.491\,j - 4.152\,k) \\ ans.6 = (d = -1.744\,i + 3.488\,j + 5.813\,k) \end{bmatrix}$$

$$Ans5 = <-29, 11>, \quad , Ans6 = <1, 27>, \quad , Ans7 = <-1, -12, 2>, \quad , Ans8 = <-21, 9, -45>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{61}, 7.810]] \\ ans.2 = \begin{bmatrix} b = <24, -20> \\ |b| = [4\sqrt{61}, 31.241] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-42, 35> \\ |c| = [7\sqrt{61}, 54.672] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <12, 4> \\ |a| = [5\sqrt{5}, 11.180] \\ |b| = [\sqrt{85}, 9.220] \\ |a + b| = [4\sqrt{10}, 12.649] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-2, 16> \\ |a| = [5\sqrt{5}, 11.180] \\ |b| = [\sqrt{85}, 9.220] \\ |a - b| = [2\sqrt{65}, 16.125] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <17, -17, 20> \\ |a| = [\sqrt{290}, 17.029] \\ |b| = [5\sqrt{10}, 15.811] \\ |a + b| = [\sqrt{978}, 31.273] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <-7, -7, 2> \\ |a| = [\sqrt{290}, 17.029] \\ |b| = [5\sqrt{10}, 15.811] \\ |a - b| = [\sqrt{102}, 10.100] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{61}, 7.810]) \\ ans.3 = (\theta = 39.806\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{130}, 11.402]) \\ ans.3 = (\theta = 307.875\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645124

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <6, -6>) \\ ans.3 = (AB = 6\,i - 6\,j) \\ ans.4 = (|AB| = (6\sqrt{2}, 8.485)) \\ ans.5 = (u = 0.707\,i - 0.707\,j) \\ ans.6 = (c = 4.243\,i - 4.243\,j) \\ ans.7 = (d = -6.364\,i + 6.364\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = <15, 6>) \\ ans.3 = (AB = 15\,i + 6\,j) \\ ans.4 = (|AB| = (3\sqrt{29}, 16.155)) \\ ans.5 = (u = 0.928\,i + 0.371\,j) \\ ans.6 = (c = 7.428\,i + 2.971\,j) \\ ans.7 = (d = -4.642\,i - 1.857\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-3, 7, -3>) \\ ans.2 = (AB = -3\,i + 7\,j - 3\,k) \\ ans.3 = (|AB| = (\sqrt{67}, 8.185)) \\ ans.4 = (u = -0.367\,i + 0.855\,j - 0.367\,k) \\ ans.5 = (c = -2.932\,i + 6.841\,j - 2.932\,k) \\ ans.6 = (d = 2.199\,i - 5.131\,j + 2.199\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = <-3, -14, -10>) \\ ans.2 = (AB = -3\,i - 14\,j - 10\,k) \\ ans.3 = (|AB| = (\sqrt{305}, 17.464)) \\ ans.4 = (u = -0.172\,i - 0.802\,j - 0.573\,k) \\ ans.5 = (c = -1.202\,i - 5.611\,j - 4.008\,k) \\ ans.6 = (d = 1.546\,i + 7.215\,j + 5.153\,k) \end{bmatrix}$$

$$Ans5 = <-24, -23>, \quad , Ans6 = <26, -29>, \quad , Ans7 = <-24, 26, -23>, \quad , Ans8 = <-23, 11, -4>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [3\sqrt{13}, 10.817]] \\ ans.2 = \begin{bmatrix} b = <-63, -42> \\ |b| = [21\sqrt{13}, 75.717] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <45, 30> \\ |c| = [15\sqrt{13}, 54.083] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = <17, -6> \\ |a| = [6\sqrt{5}, 13.416] \\ |b| = [\sqrt{157}, 12.530] \\ |a + b| = [5\sqrt{13}, 18.028] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = <-5, -18> \\ |a| = [6\sqrt{5}, 13.416] \\ |b| = [\sqrt{157}, 12.530] \\ |a - b| = [\sqrt{349}, 18.682] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <18, -17, -1> \\ |a| = [\sqrt{182}, 13.491] \\ |b| = [\sqrt{218}, 14.765] \\ |a + b| = [\sqrt{614}, 24.779] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = <4, 7, -11> \\ |a| = [\sqrt{182}, 13.491] \\ |b| = [\sqrt{218}, 14.765] \\ |a - b| = [\sqrt{186}, 13.638] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{74}, 8.602]) \\ ans.3 = (\theta = 35.538\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 212.005\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.645125

$$Ans1 = \begin{bmatrix} ans.2 = (AB = <4, 6>) \\ ans.3 = (AB = 4\,i + 6\,j) \\ ans.4 = (|AB| = (2\sqrt{13}, 7.211)) \\ ans.5 = (u = 0.555\,i + 0.832\,j) \\ ans.6 = (c = 3.328\,i + 4.992\,j) \\ ans.7 = (d = -3.883\,i - 5.824\,j) \end{bmatrix}, \quad Ans2 = \begin{bmatrix} ans.2 = (AB = <15, 3>) \\ ans.3 = (AB = 15\,i + 3\,j) \\ ans.4 = (|AB| = (3\sqrt{26}, 15.297)) \\ ans.5 = (u = 0.981\,i + 0.196\,j) \\ ans.6 = (c = 7.845\,i + 1.569\,j) \\ ans.7 = (d = -8.825\,i - 1.765\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = <-3, 5, 4>) \\ ans.2 = (AB = -3\,i + 5\,j + 4\,k) \\ ans.3 = (|AB| = (5\sqrt{2}, 7.071)) \\ ans.4 = (u = -0.424\,i + 0.707\,j + 0.566\,k) \\ ans.5 = (c = -2.970\,i + 4.950\,j + 3.960\,k) \\ ans.6 = (d = 2.121\,i - 3.536\,j - 2.828\,k) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} ans.1 = (AB = <-3, -14, 12>) \\ ans.2 = (AB = -3\,i - 14\,j + 12\,k) \\ ans.3 = (|AB| = (\sqrt{349}, 18.682)) \\ ans.4 = (u = -0.161\,i - 0.749\,j + 0.642\,k) \\ ans.5 = (c = -1.124\,i - 5.246\,j + 4.496\,k) \\ ans.6 = (d = 0.964\,i + 4.496\,j - 3.854\,k) \end{bmatrix}$$

$$Ans5 = <-40, -10>, \quad Ans6 = <-2, -9>, \quad Ans7 = <-8, -6, 55>, \quad Ans8 = <-15, 8, -47>$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{113}, 10.630]] \\ ans.2 = \begin{bmatrix} b = <49, 56> \\ |b| = [7\sqrt{113}, 74.411] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = <-42, -48> \\ |c| = [6\sqrt{113}, 63.781] \end{bmatrix} \end{bmatrix}, \quad Ans10 = \begin{bmatrix} a + b = <-7, 20> \\ |a| = [\sqrt{265}, 16.279] \\ |b| = [\sqrt{106}, 10.296] \\ |a + b| = [\sqrt{449}, 21.190] \end{bmatrix}, \quad Ans11 = \begin{bmatrix} a - b = <-17, 2> \\ |a| = [\sqrt{265}, 16.279] \\ |b| = [\sqrt{106}, 10.296] \\ |a - b| = [\sqrt{293}, 17.117] \end{bmatrix}, \quad \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = <0, 18, -3> \\ |a| = [\sqrt{213}, 14.595] \\ |b| = [3\sqrt{26}, 15.297] \\ |a + b| = [3\sqrt{37}, 18.248] \end{bmatrix}, \quad Ans13 = \begin{bmatrix} a - b = <16, -4, -17> \\ |a| = [\sqrt{213}, 14.595] \\ |b| = [3\sqrt{26}, 15.297] \\ |a - b| = [\sqrt{561}, 23.685] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{145}, 12.042]) \\ ans.3 = (\theta = 41.634\ degrees) \end{bmatrix}, \quad Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 122.005\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645126

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < 7 , -5 >) \\ ans.3 = (AB = 7\,i - 5\,j) \\ ans.4 = (|AB| = (\sqrt{74}, 8.602)) \\ ans.5 = (u = 0.814\,i - 0.581\,j) \\ ans.6 = (c = 4.069\,i - 2.906\,j) \\ ans.7 = (d = -4.882\,i + 3.487\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 6 , -15 >) \\ ans.3 = (AB = 6\,i - 15\,j) \\ ans.4 = (|AB| = (3\sqrt{29}, 16.155)) \\ ans.5 = (u = 0.371\,i - 0.928\,j) \\ ans.6 = (c = 3.343\,i - 8.356\,j) \\ ans.7 = (d = -1.857\,i + 4.642\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -6 , -4 , -4 >) \\ ans.2 = (AB = -6\,i - 4\,j - 4\,k) \\ ans.3 = (|AB| = (2\sqrt{17}, 8.246)) \\ ans.4 = (u = -0.728\,i - 0.485\,j - 0.485\,k) \\ ans.5 = (c = -4.366\,i - 2.910\,j - 2.910\,k) \\ ans.6 = (d = 5.093\,i + 3.395\,j + 3.395\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 15 , -9 , 3 >) \\ ans.2 = (AB = 15\,i - 9\,j + 3\,k) \\ ans.3 = (|AB| = (3\sqrt{35}, 17.748)) \\ ans.4 = (u = 0.845\,i - 0.507\,j + 0.169\,k) \\ ans.5 = (c = 4.226\,i - 2.535\,j + 0.845\,k) \\ ans.6 = (d = -7.606\,i + 4.564\,j - 1.521\,k) \end{bmatrix}$$

$$Ans5 = < 12 , 17 >, \quad , Ans6 = < 1 , -1 >, \quad , Ans7 = < 1 , -24 , -24 >, \quad , Ans8 = < -14 , 5 , -23 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{85}, 9.220]] \\ ans.2 = \begin{bmatrix} b = < 28 , -24 > \\ |b| = [4\sqrt{85}, 36.878] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -35 , 30 > \\ |c| = [5\sqrt{85}, 46.098] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < -6 , 19 > \\ |a| = [\sqrt{194}, 13.928] \\ |b| = [\sqrt{157}, 12.530] \\ |a + b| = [\sqrt{397}, 19.925] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 16 , 7 > \\ |a| = [\sqrt{194}, 13.928] \\ |b| = [\sqrt{157}, 12.530] \\ |a - b| = [\sqrt{305}, 17.464] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 19 , -19 , -16 > \\ |a| = [2\sqrt{70}, 16.733] \\ |b| = [\sqrt{254}, 15.937] \\ |a + b| = [\sqrt{978}, 31.273] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -7 , -5 , -4 > \\ |a| = [2\sqrt{70}, 16.733] \\ |b| = [\sqrt{254}, 15.937] \\ |a - b| = [3\sqrt{10}, 9.487] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 49.399\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{74}, 8.602]) \\ ans.3 = (\theta = 305.538\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.645127

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -4\ ,\ 5 >) \\ ans.3 = (AB = -4\ i + 5\ j) \\ ans.4 = (\left| AB \right| = (\sqrt{41}\ , 6.403)) \\ ans.5 = (u = -0.625\ i + 0.781\ j) \\ ans.6 = (c = -4.998\ i + 6.247\ j) \\ ans.7 = (d = 3.748\ i - 4.685\ j) \end{bmatrix},\quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -6\ ,\ 9 >) \\ ans.3 = (AB = -6\ i + 9\ j) \\ ans.4 = (\left| AB \right| = (3\sqrt{13}\ , 10.817)) \\ ans.5 = (u = -0.555\ i + 0.832\ j) \\ ans.6 = (c = -4.438\ i + 6.656\ j) \\ ans.7 = (d = 3.883\ i - 5.824\ j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -6\ ,\ -8\ ,\ 7 >) \\ ans.2 = (AB = -6\ i - 8\ j + 7\ k) \\ ans.3 = (\left| AB \right| = (\sqrt{149}\ , 12.207)) \\ ans.4 = (u = -0.492\ i - 0.655\ j + 0.573\ k) \\ ans.5 = (c = -2.949\ i - 3.932\ j + 3.441\ k) \\ ans.6 = (d = 2.458\ i + 3.277\ j - 2.867\ k) \end{bmatrix},\quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -4\ ,\ 13\ ,\ -6 >) \\ ans.2 = (AB = -4\ i + 13\ j - 6\ k) \\ ans.3 = (\left| AB \right| = (\sqrt{221}\ , 14.866)) \\ ans.4 = (u = -0.269\ i + 0.874\ j - 0.404\ k) \\ ans.5 = (c = -2.153\ i + 6.996\ j - 3.229\ k) \\ ans.6 = (d = 2.422\ i - 7.870\ j + 3.632\ k) \end{bmatrix}$$

$$Ans5 = < -6\ ,\ 15 >,\quad , Ans6 = < 20\ ,\ 27 >,\quad , Ans7 = < 31\ ,\ 2\ ,\ 30 >,\quad , Ans8 = < 20\ ,\ -12\ ,\ 8 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [\left| a \right| = [\sqrt{106}, 10.296]] \\ ans.2 = \begin{bmatrix} b = < -54\ ,\ 30 > \\ \left| b \right| = [6\sqrt{106}, 61.774] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 45\ ,\ -25 > \\ \left| c \right| = [5\sqrt{106}, 51.478] \end{bmatrix} \end{bmatrix},\quad , Ans10 = \begin{bmatrix} a + b = < 2\ ,\ 18 > \\ \left| a \right| = [\sqrt{157}, 12.530] \\ \left| b \right| = [\sqrt{113}, 10.630] \\ \left| a + b \right| = [2\sqrt{82}, 18.111] \end{bmatrix},\quad , Ans11 = \begin{bmatrix} a - b = < -14\ ,\ 4 > \\ \left| a \right| = [\sqrt{157}, 12.530] \\ \left| b \right| = [\sqrt{113}, 10.630] \\ \left| a - b \right| = [2\sqrt{53}, 14.560] \end{bmatrix},\quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -17\ ,\ 14\ ,\ 17 > \\ \left| a \right| = [\sqrt{233}, 15.264] \\ \left| b \right| = [\sqrt{205}, 14.318] \\ \left| a + b \right| = [3\sqrt{86}, 27.821] \end{bmatrix},\quad , Ans13 = \begin{bmatrix} a - b = < -7\ ,\ 2\ ,\ -7 > \\ \left| a \right| = [\sqrt{233}, 15.264] \\ \left| b \right| = [\sqrt{205}, 14.318] \\ \left| a - b \right| = [\sqrt{102}, 10.100] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (\left| a \right| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 57.995\ degrees) \end{bmatrix},\quad , Ans15 = \begin{bmatrix} ans.2 = (\left| a \right| = [\sqrt{106}, 10.296]) \\ ans.3 = (\theta = 330.945\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645128

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < 9 , -6 >) \\ ans.3 = (AB = 9\,i - 6\,j) \\ ans.4 = (|AB| = (3\sqrt{13}, 10.817)) \\ ans.5 = (u = 0.832\,i - 0.555\,j) \\ ans.6 = (c = 7.488\,i - 4.992\,j) \\ ans.7 = (d = -6.656\,i + 4.438\,j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < -4 , 9 >) \\ ans.3 = (AB = -4\,i + 9\,j) \\ ans.4 = (|AB| = (\sqrt{97}, 9.849)) \\ ans.5 = (u = -0.406\,i + 0.914\,j) \\ ans.6 = (c = -3.249\,i + 7.310\,j) \\ ans.7 = (d = 2.031\,i - 4.569\,j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 5 , -3 , 5 >) \\ ans.2 = (AB = 5\,i - 3\,j + 5\,k) \\ ans.3 = (|AB| = (\sqrt{59}, 7.681)) \\ ans.4 = (u = 0.651\,i - 0.391\,j + 0.651\,k) \\ ans.5 = (c = 5.208\,i - 3.125\,j + 5.208\,k) \\ ans.6 = (d = -4.557\,i + 2.734\,j - 4.557\,k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 8 , -5 , -9 >) \\ ans.2 = (AB = 8\,i - 5\,j - 9\,k) \\ ans.3 = (|AB| = (\sqrt{170}, 13.038)) \\ ans.4 = (u = 0.614\,i - 0.383\,j - 0.690\,k) \\ ans.5 = (c = 4.909\,i - 3.068\,j - 5.522\,k) \\ ans.6 = (d = -3.681\,i + 2.301\,j + 4.142\,k) \end{bmatrix}$$

$$Ans5 = < 41 , -34 >, \quad , Ans6 = < 15 , 8 >, \quad , Ans7 = < 15 , 55 , -24 >, \quad , Ans8 = < -10 , 24 , -9 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{85}, 9.220]] \\ ans.2 = \begin{bmatrix} b = < 24 , 28 > \\ |b| = [4\sqrt{85}, 36.878] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -30 , -35 > \\ |c| = [5\sqrt{85}, 46.098] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 14 , 4 > \\ |a| = [\sqrt{181}, 13.454] \\ |b| = [\sqrt{61}, 7.810] \\ |a + b| = [2\sqrt{53}, 14.560] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 4 , 16 > \\ |a| = [\sqrt{181}, 13.454] \\ |b| = [\sqrt{61}, 7.810] \\ |a - b| = [4\sqrt{17}, 16.492] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < 1 , 6 , -16 > \\ |a| = [2\sqrt{70}, 16.733] \\ |b| = [\sqrt{217}, 14.731] \\ |a + b| = [\sqrt{293}, 17.117] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 19 , 18 , 4 > \\ |a| = [2\sqrt{70}, 16.733] \\ |b| = [\sqrt{217}, 14.731] \\ |a - b| = [\sqrt{701}, 26.476] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{145}, 12.042]) \\ ans.3 = (\theta = 48.366\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 212.005\ degrees) \end{bmatrix}$$

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Tutorial01 Answers for No.645129

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -5 , -3 >) \\ ans.3 = (AB = -5\, i - 3\, j) \\ ans.4 = (|AB| = (\sqrt{34}, 5.831)) \\ ans.5 = (u = -0.857\, i - 0.514\, j) \\ ans.6 = (c = -6.002\, i - 3.601\, j) \\ ans.7 = (d = 4.287\, i + 2.572\, j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 5 , -12 >) \\ ans.3 = (AB = 5\, i - 12\, j) \\ ans.4 = (|AB| = (13, 13.000)) \\ ans.5 = (u = 0.385\, i - 0.923\, j) \\ ans.6 = (c = 2.308\, i - 5.538\, j) \\ ans.7 = (d = -3.077\, i + 7.385\, j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < 6 , -9 , 4 >) \\ ans.2 = (AB = 6\, i - 9\, j + 4\, k) \\ ans.3 = (|AB| = (\sqrt{133}, 11.533)) \\ ans.4 = (u = 0.520\, i - 0.780\, j + 0.347\, k) \\ ans.5 = (c = 4.162\, i - 6.243\, j + 2.775\, k) \\ ans.6 = (d = -2.601\, i + 3.902\, j - 1.734\, k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < 6 , 10 , 4 >) \\ ans.2 = (AB = 6\, i + 10\, j + 4\, k) \\ ans.3 = (|AB| = (2\sqrt{38}, 12.329)) \\ ans.4 = (u = 0.487\, i + 0.811\, j + 0.324\, k) \\ ans.5 = (c = 3.407\, i + 5.678\, j + 2.271\, k) \\ ans.6 = (d = -2.433\, i - 4.056\, j - 1.622\, k) \end{bmatrix}$$

$$Ans5 = < 9 , -11 >, \quad , Ans6 = < 18 , 9 >, \quad , Ans7 = < -28 , -36 , 3 >, \quad , Ans8 = < 33 , -21 , 39 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [3\sqrt{13}, 10.817]] \\ ans.2 = \begin{bmatrix} b = < 45 , 30 > \\ |b| = [15\sqrt{13}, 54.083] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < -63 , -42 > \\ |c| = [21\sqrt{13}, 75.717] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 20 , -1 > \\ |a| = [\sqrt{205}, 14.318] \\ |b| = [\sqrt{74}, 8.602] \\ |a + b| = [\sqrt{401}, 20.025] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < 6 , -11 > \\ |a| = [\sqrt{205}, 14.318] \\ |b| = [\sqrt{74}, 8.602] \\ |a - b| = [\sqrt{157}, 12.530] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -17 , -18 , 15 > \\ |a| = [17, 17.000] \\ |b| = [3\sqrt{17}, 12.369] \\ |a + b| = [\sqrt{838}, 28.948] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < 1 , -6 , 3 > \\ |a| = [17, 17.000] \\ |b| = [3\sqrt{17}, 12.369] \\ |a - b| = [\sqrt{46}, 6.782] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{85}, 9.220]) \\ ans.3 = (\theta = 49.399\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{89}, 9.434]) \\ ans.3 = (\theta = 122.005\ degrees) \end{bmatrix}$$

Tutorial01 Answers for No.645130

$$Ans1 = \begin{bmatrix} ans.2 = (AB = < -4 , 5 >) \\ ans.3 = (AB = -4\, i + 5\, j) \\ ans.4 = (|AB| = (\sqrt{41}, 6.403)) \\ ans.5 = (u = -0.625\, i + 0.781\, j) \\ ans.6 = (c = -4.998\, i + 6.247\, j) \\ ans.7 = (d = 3.123\, i - 3.904\, j) \end{bmatrix}, \quad , Ans2 = \begin{bmatrix} ans.2 = (AB = < 5 , 11 >) \\ ans.3 = (AB = 5\, i + 11\, j) \\ ans.4 = (|AB| = (\sqrt{146}, 12.083)) \\ ans.5 = (u = 0.414\, i + 0.910\, j) \\ ans.6 = (c = 2.897\, i + 6.373\, j) \\ ans.7 = (d = -3.724\, i - 8.193\, j) \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} ans.1 = (AB = < -9 , 3 , -3 >) \\ ans.2 = (AB = -9\, i + 3\, j - 3\, k) \\ ans.3 = (|AB| = (3\sqrt{11}, 9.950)) \\ ans.4 = (u = -0.905\, i + 0.302\, j - 0.302\, k) \\ ans.5 = (c = -8.141\, i + 2.714\, j - 2.714\, k) \\ ans.6 = (d = 4.523\, i - 1.508\, j + 1.508\, k) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} ans.1 = (AB = < -6 , 16 , -8 >) \\ ans.2 = (AB = -6\, i + 16\, j - 8\, k) \\ ans.3 = (|AB| = (2\sqrt{89}, 18.868)) \\ ans.4 = (u = -0.318\, i + 0.848\, j - 0.424\, k) \\ ans.5 = (c = -2.544\, i + 6.784\, j - 3.392\, k) \\ ans.6 = (d = 2.226\, i - 5.936\, j + 2.968\, k) \end{bmatrix}$$

$$Ans5 = < -23 , -15 >, \quad , Ans6 = < 29 , -15 >, \quad , Ans7 = < 24 , -31 , 40 >, \quad , Ans8 = < -35 , 10 , 21 >$$

$$Ans9 = \begin{bmatrix} ans.1 = [|a| = [\sqrt{113}, 10.630]] \\ ans.2 = \begin{bmatrix} b = < -56 , 49 > \\ |b| = [7\sqrt{113}, 74.411] \end{bmatrix} \\ ans.4 = \begin{bmatrix} c = < 24 , -21 > \\ |c| = [3\sqrt{113}, 31.890] \end{bmatrix} \end{bmatrix}, \quad , Ans10 = \begin{bmatrix} a + b = < 6 , 19 > \\ |a| = [\sqrt{193}, 13.892] \\ |b| = [\sqrt{218}, 14.765] \\ |a + b| = [\sqrt{397}, 19.925] \end{bmatrix}, \quad , Ans11 = \begin{bmatrix} a - b = < -20 , 5 > \\ |a| = [\sqrt{193}, 13.892] \\ |b| = [\sqrt{218}, 14.765] \\ |a - b| = [5\sqrt{17}, 20.616] \end{bmatrix}, \quad , \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ MUT \end{bmatrix}$$

$$Ans12 = \begin{bmatrix} a + b = < -1 , -18 , -5 > \\ |a| = [\sqrt{205}, 14.318] \\ |b| = [9\sqrt{3}, 15.588] \\ |a + b| = [5\sqrt{14}, 18.708] \end{bmatrix}, \quad , Ans13 = \begin{bmatrix} a - b = < -11 , 8 , -19 > \\ |a| = [\sqrt{205}, 14.318] \\ |b| = [9\sqrt{3}, 15.588] \\ |a - b| = [\sqrt{546}, 23.367] \end{bmatrix}$$

$$Ans14 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 41.186\ degrees) \end{bmatrix}, \quad , Ans15 = \begin{bmatrix} ans.2 = (|a| = [\sqrt{113}, 10.630]) \\ ans.3 = (\theta = 138.814\ degrees) \end{bmatrix}$$

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