

แบบฝึกหัดเรื่อง เมทริกซ์

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## Basic Operations

กำหนดเมทริกซ์ $\mathbf{A}-\mathbf{K}$ และค่าคงที่ $m, p$ จงหา

| 1. $\mathbf{A}^{T}=\left[\begin{array}{rr}-5 & -3 \\ 3 & -1 \\ -4 & -5 \\ 1 & -2\end{array}\right]_{4 \times 2}^{\top}=\left[\begin{array}{rrrr}-5 & 3 & -4 & 1 \\ -3 & -1 & -5 & -2\end{array}\right]_{2 \times 4}$ | 2. $\mathbf{D}^{T}=\left[\begin{array}{rrr}1 & 5 & -5 \\ 3 & -6 & -5\end{array}\right]_{2 \times 3}^{\top}=\left[\begin{array}{rr}1 & 3 \\ 5 & -6 \\ -5 & -5\end{array}\right]_{3 \times 2}$ |
| :---: | :---: |
| 3. $\mathbf{F}^{T}=\left[\begin{array}{rrr}-2 & 3 & -2 \\ 3 & -3 & -2\end{array}\right]_{2 \times 3}^{\top}=\left[\begin{array}{rr}-2 & 3 \\ 3 & -3 \\ -2 & -2\end{array}\right]_{3 \times 2}$ | 4. $\mathbf{H}^{T}=\left[\begin{array}{c}-2 \\ 1 \\ -3\end{array}\right]_{3 \times 1}^{\top}=\left[\begin{array}{lll}-2 & 1 & -3\end{array}\right]_{1 \times 3}$ |
|  |  |
|  | 8. $\mathbf{E}-\mathbf{C}^{T}=\left[\begin{array}{ll}-5 & -4 \\ \text { (3×2) }(2 \times 3)^{T} \\ =(3 \times 2\end{array}\right]-\left[\begin{array}{cc}3 & -7 \\ 3 & -1 \\ 3 & -7\end{array}\right]$ หงใใั้ $=\left[\begin{array}{cc}-8 & 3 \\ -8 & 0 \\ -13 & -8\end{array}\right]_{3 \times 2}$ |
|  | 10. $m \mathbf{E}-\mathbf{A}^{T}=$ Y'íhera $_{(3 \times 2)}^{(4 \times 2)^{T}}$ (Undefmed) $) ~$ $\neq\}^{\frac{4}{2 \times 4}}$ <br>  |

11. $\mathbf{F} \times \mathbf{G}=\left[\begin{array}{ccc}-2 & 3 & -2 \\ 2 & \times 3 & -2\end{array}\right]\left[\begin{array}{ccc}0 & 2 & 3 \\ 0 & 0 & -2 \\ 0 & 2 & -3\end{array}\right]$




$$
\begin{aligned}
& \text { 14. } \mathbf{K}^{2}=K \cdot K=\left[\begin{array}{cc}
2 & 2 \\
2 \times 12(2) 2 \\
-1 & 0
\end{array}\right]\left[\begin{array}{cc}
2 & 2 \\
-1 & 0
\end{array}\right] \\
& =\left[\begin{array}{ll}
2(2)+2(-1) & 2(2)+2(0) \\
(-1)(2)+0(-1) & (-1)(2)+0(0)
\end{array}\right] \\
& =\left[\begin{array}{cc}
2 & 4 \\
-2 & -2
\end{array}\right]_{2 \times 2}
\end{aligned}
$$

15. $\mathbf{F}^{\top} \mathbf{F}=\left[\begin{array}{rrr}-2 & 3 & -2 \\ 3 & -3 & -2\end{array}\right]^{\top} \cdot\left[\begin{array}{rrr}-2 & 3 & -2 \\ 3 & -3 & -2\end{array}\right]$
$\underset{3 \times 3}{3 \times(2)}=\left[\begin{array}{cc}-2 & 3 \\ 3 & -3 \\ -2 & -2\end{array}\right]\left[\begin{array}{ccc}-2 & 3 & -2 \\ 3 & -3 & -2\end{array}\right]$
uरकh $=[(-2)(-2)+3(3)(-2)(3)+3(-3)(-2)(-2)+3(-2)]=\left[\begin{array}{lll}13 & -15 & -2\end{array}\right]$
$\left.\begin{array}{ll}2 \times 2 & \text { und } 1 / 10 \\ 5 & -2\end{array}\right]\left[\begin{array}{ll}(-2)(-2)+3(3)+(-2)(-2) & (-2)(3)+3(-3)+(-2)(-2) \\ 3(-2)+(-3)(3)+(-2)(-2) & 3(3)+(-3)(-3)+(-2)(-2)\end{array}\right]$
$3(-2)+(-3 \times 3) \quad 3(3)+(-3)+(-3) \quad 3(-2)+(3) \times-2)$
$(-2)(-2)+(-2)(3) \quad(-2)(3)+(-2)(-3)(-2)(-4)+(-2)(2)]\left[\begin{array}{ccc}-2 & 0 & 8\end{array}\right]_{3 \times 3}\left[\begin{array}{ll}-11 & 22\end{array}\right]_{2 \times 2}$
16. $\mathbf{F}^{T} \mathbf{F}-p \mathbf{K}^{2}=$ ไ212 $2 \times 2$ (Undefined)

หาकाไม่ ${ }^{\circ}$
18. $p \mathbf{K}^{2}-\mathbf{F F}^{T}=3\left[\begin{array}{cc}2 \times 2 \\ 2 \times 2 \\ -2 & -2\end{array}\right]-\left[\begin{array}{cc}17 & -11 \\ -11 & 22\end{array}\right]$
$=\left[\begin{array}{cc}6 & 12 \\ -6 & -6\end{array}\right]-\left[\begin{array}{cc}17 & -11 \\ -11 & 22\end{array}\right]$

$$
=\left[\begin{array}{cc}
-11 & 23 \\
5 & -28
\end{array}\right]_{2 x_{2}}
$$

X Math@MUT XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX6300110-00003XX Matrices01 for No. 3

$$
\begin{gathered}
A=\left[\begin{array}{rr}
-5 & -3 \\
3 & -1 \\
-4 & -5 \\
1 & -2
\end{array}\right], B=\left[\begin{array}{rr}
-2 & -6 \\
-5 & 5 \\
-2 & 6 \\
-2 & -6
\end{array}\right], C=\left[\begin{array}{rrr}
3 & 3 & 7 \\
-7 & -1 & 1
\end{array}\right], \mathrm{D}=\left[\begin{array}{rrr}
1 & 5 & -5 \\
3 & -6 & -5
\end{array}\right], \quad,\left[\begin{array}{ll}
-5 & -4 \\
-5 & -1 \\
-6 & -7
\end{array}\right], F=\left[\begin{array}{rrr}
-2 & 3 & -2 \\
3 & -3 & -2
\end{array}\right], G=\left[\begin{array}{rrr}
0 & 2 & 3 \\
0 & 0 & -2 \\
0 & 2 & -3
\end{array}\right], H=\left[\begin{array}{r}
-2 \\
1 \\
-3
\end{array}\right], K=\left[\begin{array}{rr}
2 & 2 \\
-1 & 0
\end{array}\right]
\end{gathered}
$$

X Math@MUT XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX6300110-00003XX Matrices01 Answers for No. 3
ExerciseMatrices01 Answers for No. 3

$$
\begin{aligned}
& A n s_{1}=\left[\begin{array}{rrrr}
-5 & 3 & -4 & 1 \\
-3 & -1 & -5 & -2
\end{array}\right], A n s_{2}=\left[\begin{array}{rr}
1 & 3 \\
5 & -6 \\
-5 & -5
\end{array}\right], A n s_{3}=\left[\begin{array}{rr}
-2 & 3 \\
3 & -3 \\
-2 & -2
\end{array}\right], \quad,\left[\begin{array}{l}
:) \\
: \mid \\
:( \\
:^{\prime}(
\end{array}\right] \\
& A n s_{4}=\left[\begin{array}{lll}
-2 & 1 & -3
\end{array}\right],, A n s_{5}=\left[\begin{array}{rr}
-7 & -9 \\
-2 & 4 \\
-6 & 1 \\
-1 & -8
\end{array}\right],, A n s_{6}=\left[\begin{array}{rrr}
2 & -2 & 12 \\
-10 & 5 & 6
\end{array}\right], \quad,\left[\begin{array}{l}
:) \\
: \mid \\
:( \\
:(
\end{array}\right] \\
& A n s_{7}=\text { "undefined", }, A n s_{8}=\left[\begin{array}{rr}
-8 & 3 \\
-8 & 0 \\
-13 & -8
\end{array}\right], A n s_{9}=\left[\begin{array}{rr}
11 & 11 \\
15 & -4 \\
7 & 9
\end{array}\right], A n s_{10}=\text { "undefined", } \\
& A n s_{11}=\left[\begin{array}{rrr}
0 & -8 & -6 \\
0 & 2 & 21
\end{array}\right], A n s_{12}=\text { "undefined", }, A n s_{13}=\left[\begin{array}{r}
-7 \\
6 \\
11
\end{array}\right], A n s_{14}=\left[\begin{array}{rr}
2 & 4 \\
-2 & -2
\end{array}\right], \quad,\left[\begin{array}{c}
:) \\
: \mid \\
:( \\
:()
\end{array}\right] \\
& A n s_{15}=\left[\begin{array}{rrr}
13 & -15 & -2 \\
-15 & 18 & 0 \\
-2 & 0 & 8
\end{array}\right], A n s_{16}=\left[\begin{array}{rr}
17 & -11 \\
-11 & 22
\end{array}\right], A n s_{17}=\text { "undefined" }^{2}, A n s_{18}=\left[\begin{array}{rr}
-11 & 23 \\
5 & -28
\end{array}\right], \quad,\left[\begin{array}{l}
:) \\
: \mid \\
:( \\
:()
\end{array}\right]
\end{aligned}
$$

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