LimitExercise01 Answers for No.9124

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.9063	0.9516	0.9950	0.9995	1.0000	...	f(0) = undefined	...	1.0000	1.0005	1.0050	1.0517	1.1070

$$\lim_{x \to 0-} f(x) = 1.0000, \quad , \lim_{x \to 0+} f(x) = 1.0000, \quad , \lim_{x \to 0} f(x) = 1.0000, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.0997	0.0500	0.0050	0.0005	0.0000	...	f(0) = undefined	...	-0.0000	-0.0005	-0.0050	-0.0500	-0.0997

$$\lim_{x \to 0-} f(x) = 0, \quad , \lim_{x \to 0+} f(x) = 0, \quad , \lim_{x \to 0} f(x) = 0, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans03 >

x	48.8000	48.9000	48.9900	48.9990	48.9999	...	a = 49	...	49.0001	49.0010	49.0100	49.1000	49.2000
f(x)	0.0715	0.0715	0.0714	0.0714	0.0714	...	f(49) = undefined	...	0.0714	0.0714	0.0714	0.0714	0.0714

$$\lim_{x \to 49-} f(x) = 0.0714, \quad , \lim_{x \to 49+} f(x) = 0.0714, \quad , \lim_{x \to 49} f(x) = 0.0714, \quad , \text{" \# f(x) is discontinuous at x = 49"}$$

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.8000	-0.9000	-0.9900	-0.9990	-0.9999	...	f(0) = undefined	...	1.0001	1.0010	1.0100	1.1000	1.2000

$$\lim_{x \to 0-} f(x) = -1.0000, \quad , \lim_{x \to 0+} f(x) = 1.0000, \quad , \lim_{x \to 0} f(x) = \textit{does not exist}, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans05 >

x	4.8000	4.9000	4.9900	4.9990	4.9999	...	a = 5	...	5.0001	5.0010	5.0100	5.1000	5.2000
f(x)	0.1136	0.1124	0.1112	0.1111	0.1111	...	f(5) = undefined	...	0.1111	0.1111	0.1110	0.1099	0.1087

$$\lim_{x \to 5-} f(x) = 0.1111, \quad , \lim_{x \to 5+} f(x) = 0.1111, \quad , \lim_{x \to 5} f(x) = 0.1111, \quad , \text{" \# f(x) is discontinuous at x = 5"}$$

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-12	4	4	4	4	Continuous
	-10	4	4	4	4	Continuous
	-2	3	3	3	3	Continuous
	4	3	4	4	4	Discontinuous
	9	5	5	5	5	Continuous

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LimitExercise01 Answers for No.9197

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.8127	-1.9033	-1.9900	-1.9990	-1.9999	...	f(0) = undefined	...	-2.0001	-2.0010	-2.0100	-2.1034	-2.2140

$\lim_{x \to 0-} f(x) = -2.0000$, , $\lim_{x \to 0+} f(x) = -2.0000$, , $\lim_{x \to 0} f(x) = -2.0000$, , " # f(x) is discontinuous at x = 0"

Ans02 >

x	24.8000	24.9000	24.9900	24.9990	24.9999	...	a = 25	...	25.0001	25.0010	25.0100	25.1000	25.2000
f(x)	9.9800	9.9900	9.9990	9.9999	10.0000	...	f(25) = undefined	...	10.0000	10.0001	10.0010	10.0100	10.0200

$\lim_{x \to 25-} f(x) = 10.0000$, , $\lim_{x \to 25+} f(x) = 10.0000$, , $\lim_{x \to 25} f(x) = 10.0000$, , " # f(x) is discontinuous at x = 25"

Ans03 >

x	3.8000	3.9000	3.9900	3.9990	3.9999	...	a = 4	...	4.0001	4.0010	4.0100	4.1000	4.2000
f(x)	0.8000	0.9000	0.9900	0.9990	0.9999	...	f(4) = undefined	...	1.0001	1.0010	1.0100	1.1000	1.2000

$\lim_{x \to 4-} f(x) = 1.0000$, , $\lim_{x \to 4+} f(x) = 1.0000$, , $\lim_{x \to 4} f(x) = 1.0000$, , " # f(x) is discontinuous at x = 4"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.1111	-1.0526	-1.0050	-1.0005	-1.0001	...	f(0) = undefined	...	1.0000	0.9995	0.9950	0.9524	0.9091

$\lim_{x \to 0-} f(x) = -1.0000$, , $\lim_{x \to 0+} f(x) = 1.0000$, , $\lim_{x \to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.0997	-0.0500	-0.0050	-0.0005	-0.0000	...	f(0) = undefined	...	0.0000	0.0005	0.0050	0.0500	0.0997

$\lim_{x \to 0-} f(x) = 0$, , $\lim_{x \to 0+} f(x) = 0$, , $\lim_{x \to 0} f(x) = 0$, , " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-2	3	3	3	3	Continuous
	-1	0	2	2	2	Discontinuous
	2	3	3	3	3	Continuous
	3	3	4	4	4	Discontinuous
	5	3	3	3	3	Continuous

LimitExercise01 Answers for No.9252

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-4.4133	-4.2033	-4.0200	-4.0020	-4.0002	...	f(0) = undefined	...	-3.9998	-3.9980	-3.9800	-3.8033	-3.6133

$\lim_{x \to 0-} f(x) = -4.0000,\quad , \lim_{x \to 0+} f(x) = -4.0000,\quad , \lim_{x \to 0} f(x) = -4.0000,$, " # f(x) is discontinuous at x = 0"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.8000	-0.9000	-0.9900	-0.9990	-0.9999	...	f(0) = undefined	...	1.0001	1.0010	1.0100	1.1000	1.2000

$\lim_{x \to 0-} f(x) = -1.0000,\quad , \lim_{x \to 0+} f(x) = 1.0000,\quad , \lim_{x \to 0} f(x) = \textit{does not exist},$, " # f(x) is discontinuous at x = 0"

Ans03 >

x	5.8000	5.9000	5.9900	5.9990	5.9999	...	a = 6	...	6.0001	6.0010	6.0100	6.1000	6.2000
f(x)	11.8000	11.9000	11.9900	11.9990	11.9999	...	f(6) = undefined	...	12.0001	12.0010	12.0100	12.1000	12.2000

$\lim_{x \to 6-} f(x) = 12.0000,\quad , \lim_{x \to 6+} f(x) = 12.0000,\quad , \lim_{x \to 6} f(x) = 12.0000,$, " # f(x) is discontinuous at x = 6"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	1.0067	1.0017	1.0000	1.0000	1.0000	...	f(0) = undefined	...	1.0000	1.0000	1.0000	1.0017	1.0067

$\lim_{x \to 0-} f(x) = 1.0000,\quad , \lim_{x \to 0+} f(x) = 1.0000,\quad , \lim_{x \to 0} f(x) = 1.0000,$, " # f(x) is discontinuous at x = 0"

Ans05 >

x	35.8000	35.9000	35.9900	35.9990	35.9999	...	a = 36	...	36.0001	36.0010	36.0100	36.1000	36.2000
f(x)	0.0834	0.0834	0.0833	0.0833	0.0833	...	f(36) = undefined	...	0.0833	0.0833	0.0833	0.0833	0.0832

$\lim_{x \to 36-} f(x) = 0.0833,\quad , \lim_{x \to 36+} f(x) = 0.0833,\quad , \lim_{x \to 36} f(x) = 0.0833,$, " # f(x) is discontinuous at x = 36"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-12	4	4	4	4	Continuous
	-9	4	4	-infinity	DNE	Discontinuous
	-2	3	3	3	3	Continuous
	0	2	2	2	2	Continuous
	10	3	3	3	3	Continuous

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LimitExercise01 Answers for No.9312

Ans01 >

x	4.8000	4.9000	4.9900	4.9990	4.9999	...	a = 5	...	5.0001	5.0010	5.0100	5.1000	5.2000
f(x)	6.8000	6.9000	6.9900	6.9990	6.9999	...	f(5) = undefined	...	7.0001	7.0010	7.0100	7.1000	7.2000

$\lim_{x \to 5-} f(x) = 7.0000$, , $\lim_{x \to 5+} f(x) = 7.0000$, , $\lim_{x \to 5} f(x) = 7.0000$, , " # f(x) is discontinuous at x = 5"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-2.5000	-2.2222	-2.0202	-2.0020	-2.0002	...	f(0) = undefined	...	1.9998	1.9980	1.9802	1.8182	1.6667

$\lim_{x \to 0-} f(x) = -2.0000$, , $\lim_{x \to 0+} f(x) = 2.0000$, , $\lim_{x \to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

Ans03 >

x	35.8000	35.9000	35.9900	35.9990	35.9999	...	a = 36	...	36.0001	36.0010	36.0100	36.1000	36.2000
f(x)	-0.0834	-0.0834	-0.0833	-0.0833	-0.0833	...	f(36) = undefined	...	-0.0833	-0.0833	-0.0833	-0.0833	-0.0832

$\lim_{x \to 36-} f(x) = -0.0833$, , $\lim_{x \to 36+} f(x) = -0.0833$, , $\lim_{x \to 36} f(x) = -0.0833$, , " # f(x) is discontinuous at x = 36"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.0997	-0.0500	-0.0050	-0.0005	-0.0000	...	f(0) = undefined	...	0.0000	0.0005	0.0050	0.0500	0.0997

$\lim_{x \to 0-} f(x) = 0$, , $\lim_{x \to 0+} f(x) = 0$, , $\lim_{x \to 0} f(x) = 0$, , " # f(x) is discontinuous at x = 0"

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	1.1033	1.0508	1.0050	1.0005	1.0001	...	f(0) = undefined	...	1.0000	0.9995	0.9950	0.9508	0.9033

$\lim_{x \to 0-} f(x) = 1.0000$, , $\lim_{x \to 0+} f(x) = 1.0000$, , $\lim_{x \to 0} f(x) = 1.0000$, , " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-9	4	4	-infinity	DNE	Discontinuous
	-8	3	3	3	3	Continuous
	-4	undefined	3	3	3	Discontinuous
	-2	3	3	3	3	Continuous
	5	3	3	3	3	Continuous

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LimitExercise01 Answers for No.9397

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.1111	-1.0526	-1.0050	-1.0005	-1.0001	...	f(0) = undefined	...	1.0000	0.9995	0.9950	0.9524	0.9091

$\lim_{x \to 0-} f(x) = -1.0000$, , $\lim_{x \to 0+} f(x) = 1.0000$, , $\lim_{x \to 0} f(x) =$ *does not exist*, , " # f(x) is discontinuous at x = 0"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	2.2067	2.1017	2.0100	2.0010	2.0001	...	f(0) = undefined	...	1.9999	1.9990	1.9900	1.9017	1.8067

$\lim_{x \to 0-} f(x) = 2.0000$, , $\lim_{x \to 0+} f(x) = 2.0000$, , $\lim_{x \to 0} f(x) = 2.0000$, , " # f(x) is discontinuous at x = 0"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.0997	0.0500	0.0050	0.0005	0.0000	...	f(0) = undefined	...	-0.0000	-0.0005	-0.0050	-0.0500	-0.0997

$\lim_{x \to 0-} f(x) = 0$, , $\lim_{x \to 0+} f(x) = 0$, , $\lim_{x \to 0} f(x) = 0$, , " # f(x) is discontinuous at x = 0"

Ans04 >

x	5.8000	5.9000	5.9900	5.9990	5.9999	...	a = 6	...	6.0001	6.0010	6.0100	6.1000	6.2000
f(x)	0.1020	0.1010	0.1001	0.1000	0.1000	...	f(6) = undefined	...	0.1000	0.1000	0.0999	0.0990	0.0980

$\lim_{x \to 6-} f(x) = 0.1000$, , $\lim_{x \to 6+} f(x) = 0.1000$, , $\lim_{x \to 6} f(x) = 0.1000$, , " # f(x) is discontinuous at x = 6"

Ans05 >

x	48.8000	48.9000	48.9900	48.9990	48.9999	...	a = 49	...	49.0001	49.0010	49.0100	49.1000	49.2000
f(x)	-0.0715	-0.0715	-0.0714	-0.0714	-0.0714	...	f(49) = undefined	...	-0.0714	-0.0714	-0.0714	-0.0714	-0.0714

$\lim_{x \to 49-} f(x) = -0.0714$, , $\lim_{x \to 49+} f(x) = -0.0714$, , $\lim_{x \to 49} f(x) = -0.0714$, , " # f(x) is discontinuous at x = 49"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-6	5	3	3	3	Discontinuous
	1	2	2	2	2	Continuous
	5	3	3	3	3	Continuous
	8	2	2	2	2	Continuous
	11	undefined	-infinity	-infinity	-infinity	Discontinuous

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LimitExercise01 Answers for No.9449

Ans01 >

x	5.8000	5.9000	5.9900	5.9990	5.9999	...	a = 6	...	6.0001	6.0010	6.0100	6.1000	6.2000
f(x)	0.5556	0.5263	0.5025	0.5003	0.5000	...	f(6) = undefined	...	0.5000	0.4998	0.4975	0.4762	0.4545

$\lim_{x \to 6-} f(x) = 0.5000$, , $\lim_{x \to 6+} f(x) = 0.5000$, , $\lim_{x \to 6} f(x) = 0.5000$, , " # f(x) is discontinuous at x = 6"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	6.6200	6.3050	6.0300	6.0030	6.0003	...	f(0) = undefined	...	5.9997	5.9970	5.9701	5.7050	5.4200

$\lim_{x \to 0-} f(x) = 6.0000$, , $\lim_{x \to 0+} f(x) = 6.0000$, , $\lim_{x \to 0} f(x) = 6.0000$, , " # f(x) is discontinuous at x = 0"

Ans03 >

x	0.8000	0.9000	0.9900	0.9990	0.9999	...	a = 1	...	1.0001	1.0010	1.0100	1.1000	1.2000
f(x)	1.8944	1.9487	1.9950	1.9995	1.9999	...	f(1) = undefined	...	2.0000	2.0005	2.0050	2.0488	2.0954

$\lim_{x \to 1-} f(x) = 2.0000$, , $\lim_{x \to 1+} f(x) = 2.0000$, , $\lim_{x \to 1} f(x) = 2.0000$, , " # f(x) is discontinuous at x = 1"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.0997	-0.0500	-0.0050	-0.0005	-0.0000	...	f(0) = undefined	...	0.0000	0.0005	0.0050	0.0500	0.0997

$\lim_{x \to 0-} f(x) = 0$, , $\lim_{x \to 0+} f(x) = 0$, , $\lim_{x \to 0} f(x) = 0$, , " # f(x) is discontinuous at x = 0"

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.1111	-1.0526	-1.0050	-1.0005	-1.0001	...	f(0) = undefined	...	1.0000	0.9995	0.9950	0.9524	0.9091

$\lim_{x \to 0-} f(x) = -1.0000$, , $\lim_{x \to 0+} f(x) = 1.0000$, , $\lim_{x \to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-8	3	3	3	3	Continuous
	-3	0	infinity	4	DNE	Discontinuous
	-2	3	3	3	3	Continuous
	-1	0	2	2	2	Discontinuous
	11	undefined	-infinity	-infinity	-infinity	Discontinuous

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LimitExercise01 Answers for No.9562

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	4.4133	4.2033	4.0200	4.0020	4.0002	...	f(0) = undefined	...	3.9998	3.9980	3.9800	3.8033	3.6133

$\lim_{x\to 0-} f(x) = 4.0000$, , $\lim_{x\to 0+} f(x) = 4.0000$, , $\lim_{x\to 0} f(x) = 4.0000$, , " # f(x) is discontinuous at x = 0"

Ans02 >

x	3.8000	3.9000	3.9900	3.9990	3.9999	...	a = 4	...	4.0001	4.0010	4.0100	4.1000	4.2000
f(x)	-0.2532	-0.2516	-0.2502	-0.2500	-0.2500	...	f(4) = undefined	...	-0.2500	-0.2500	-0.2498	-0.2485	-0.2470

$\lim_{x\to 4-} f(x) = -0.2500$, , $\lim_{x\to 4+} f(x) = -0.2500$, , $\lim_{x\to 4} f(x) = -0.2500$, , " # f(x) is discontinuous at x = 4"

Ans03 >

x	6.8000	6.9000	6.9900	6.9990	6.9999	...	a = 7	...	7.0001	7.0010	7.0100	7.1000	7.2000
f(x)	0.0926	0.0917	0.0910	0.0909	0.0909	...	f(7) = undefined	...	0.0909	0.0909	0.0908	0.0901	0.0893

$\lim_{x\to 7-} f(x) = 0.0909$, , $\lim_{x\to 7+} f(x) = 0.0909$, , $\lim_{x\to 7} f(x) = 0.0909$, , " # f(x) is discontinuous at x = 7"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-2.5000	-2.2222	-2.0202	-2.0020	-2.0002	...	f(0) = undefined	...	1.9998	1.9980	1.9802	1.8182	1.6667

$\lim_{x\to 0-} f(x) = -2.0000$, , $\lim_{x\to 0+} f(x) = 2.0000$, , $\lim_{x\to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.9933	0.9983	1.0000	1.0000	1.0000	...	f(0) = undefined	...	1.0000	1.0000	1.0000	0.9983	0.9933

$\lim_{x\to 0-} f(x) = 1.0000$, , $\lim_{x\to 0+} f(x) = 1.0000$, , $\lim_{x\to 0} f(x) = 1.0000$, , " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-10	4	4	4	4	Continuous
	-4	undefined	3	3	3	Discontinuous
	-3	0	infinity	4	DNE	Discontinuous
	1	2	2	2	2	Continuous
	9	5	5	5	5	Continuous

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LimitExercise01 Answers for No.9721

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-2.8000	-2.9000	-2.9900	-2.9990	-2.9999	...	f(0) = undefined	...	3.0001	3.0010	3.0100	3.1000	3.2000

$\lim_{x\to 0-} f(x) = -3.0000$, , $\lim_{x\to 0+} f(x) = 3.0000$, , $\lim_{x\to 0} f(x) =$ *does not exist*, , " # f(x) is discontinuous at x = 0"

Ans02 >

x	63.8000	63.9000	63.9900	63.9990	63.9999	...	a = 64	...	64.0001	64.0010	64.0100	64.1000	64.2000
f(x)	-0.0625	-0.0625	-0.0625	-0.0625	-0.0625	...	f(64) = undefined	...	-0.0625	-0.0625	-0.0625	-0.0625	-0.0625

$\lim_{x\to 64-} f(x) = -0.0625$, , $\lim_{x\to 64+} f(x) = -0.0625$, , $\lim_{x\to 64} f(x) = -0.0625$, , " # f(x) is discontinuous at x = 64"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.0997	-0.0500	-0.0050	-0.0005	-0.0000	...	f(0) = undefined	...	0.0000	0.0005	0.0050	0.0500	0.0997

$\lim_{x\to 0-} f(x) = 0$, , $\lim_{x\to 0+} f(x) = 0$, , $\lim_{x\to 0} f(x) = 0$, , " # f(x) is discontinuous at x = 0"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	6.3444	6.6614	6.9651	6.9965	6.9996	...	f(0) = undefined	...	7.0004	7.0035	7.0351	7.3620	7.7491

$\lim_{x\to 0-} f(x) = 7.0000$, , $\lim_{x\to 0+} f(x) = 7.0000$, , $\lim_{x\to 0} f(x) = 7.0000$, , " # f(x) is discontinuous at x = 0"

Ans05 >

x	1.8000	1.9000	1.9900	1.9990	1.9999	...	a = 2	...	2.0001	2.0010	2.0100	2.1000	2.2000
f(x)	6.8000	6.9000	6.9900	6.9990	6.9999	...	f(2) = undefined	...	7.0001	7.0010	7.0100	7.1000	7.2000

$\lim_{x\to 2-} f(x) = 7.0000$, , $\lim_{x\to 2+} f(x) = 7.0000$, , $\lim_{x\to 2} f(x) = 7.0000$, , " # f(x) is discontinuous at x = 2"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-12	4	4	4	4	Continuous
	-10	4	4	4	4	Continuous
	-8	3	3	3	3	Continuous
	1	2	2	2	2	Continuous
	6	undefined	2	2	2	Discontinuous

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LimitExercise01 Answers for No.9789

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.8000	-1.9000	-1.9900	-1.9990	-1.9999	...	f(0) = undefined	...	2.0001	2.0010	2.0100	2.1000	2.2000

$\lim_{x \to 0-} f(x) = -2.0000,\quad \lim_{x \to 0+} f(x) = 2.0000,\quad \lim_{x \to 0} f(x) = \textit{does not exist},$ " # f(x) is discontinuous at x = 0"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	1.0067	1.0017	1.0000	1.0000	1.0000	...	f(0) = undefined	...	1.0000	1.0000	1.0000	1.0017	1.0067

$\lim_{x \to 0-} f(x) = 1.0000,\quad \lim_{x \to 0+} f(x) = 1.0000,\quad \lim_{x \to 0} f(x) = 1.0000,$ " # f(x) is discontinuous at x = 0"

Ans03 >

x	63.8000	63.9000	63.9900	63.9990	63.9999	...	a = 64	...	64.0001	64.0010	64.0100	64.1000	64.2000
f(x)	15.9875	15.9937	15.9994	16.0000	16.0000	...	f(64) = undefined	...	16.0000	16.0000	16.0006	16.0062	16.0125

$\lim_{x \to 64-} f(x) = 16.0000,\quad \lim_{x \to 64+} f(x) = 16.0000,\quad \lim_{x \to 64} f(x) = 16.0000,$ " # f(x) is discontinuous at x = 64"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-2.7190	-2.8549	-2.9850	-2.9985	-2.9998	...	f(0) = undefined	...	-3.0002	-3.0015	-3.0151	-3.1551	-3.3210

$\lim_{x \to 0-} f(x) = -3.0000,\quad \lim_{x \to 0+} f(x) = -3.0000,\quad \lim_{x \to 0} f(x) = -3.0000,$ " # f(x) is discontinuous at x = 0"

Ans05 >

x	1.8000	1.9000	1.9900	1.9990	1.9999	...	a = 2	...	2.0001	2.0010	2.0100	2.1000	2.2000
f(x)	0.3571	0.3448	0.3344	0.3334	0.3333	...	f(2) = undefined	...	0.3333	0.3332	0.3322	0.3226	0.3125

$\lim_{x \to 2-} f(x) = 0.3333,\quad \lim_{x \to 2+} f(x) = 0.3333,\quad \lim_{x \to 2} f(x) = 0.3333,$ " # f(x) is discontinuous at x = 2"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-1	0	2	2	2	Discontinuous
	0	2	2	2	2	Continuous
	3	3	4	4	4	Discontinuous
	6	undefined	2	2	2	Discontinuous
	12	4	4	4	4	Continuous

LimitExercise01 Answers for No.9795

Ans01 >

x	15.8000	15.9000	15.9900	15.9990	15.9999	...	a = 16	...	16.0001	16.0010	16.0100	16.1000	16.2000
f(x)	0.1254	0.1252	0.1250	0.1250	0.1250	...	f(16) = undefined	...	0.1250	0.1250	0.1250	0.1248	0.1246

$$\lim_{x \to 16-} f(x) = 0.1250, \quad , \lim_{x \to 16+} f(x) = 0.1250, \quad , \lim_{x \to 16} f(x) = 0.1250, \quad , \text{" \# f(x) is discontinuous at x = 16"}$$

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	4.4133	4.2033	4.0200	4.0020	4.0002	...	f(0) = undefined	...	3.9998	3.9980	3.9800	3.8033	3.6133

$$\lim_{x \to 0-} f(x) = 4.0000, \quad , \lim_{x \to 0+} f(x) = 4.0000, \quad , \lim_{x \to 0} f(x) = 4.0000, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans03 >

x	0.8000	0.9000	0.9900	0.9990	0.9999	...	a = 1	...	1.0001	1.0010	1.0100	1.1000	1.2000
f(x)	-0.4545	-0.4762	-0.4975	-0.4998	-0.5000	...	f(1) = undefined	...	-0.5000	-0.5003	-0.5025	-0.5263	-0.5556

$$\lim_{x \to 1-} f(x) = -0.5000, \quad , \lim_{x \to 1+} f(x) = -0.5000, \quad , \lim_{x \to 1} f(x) = -0.5000, \quad , \text{" \# f(x) is discontinuous at x = 1"}$$

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	1.0067	1.0017	1.0000	1.0000	1.0000	...	f(0) = undefined	...	1.0000	1.0000	1.0000	1.0017	1.0067

$$\lim_{x \to 0-} f(x) = 1.0000, \quad , \lim_{x \to 0+} f(x) = 1.0000, \quad , \lim_{x \to 0} f(x) = 1.0000, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.8000	-1.9000	-1.9900	-1.9990	-1.9999	...	f(0) = undefined	...	2.0001	2.0010	2.0100	2.1000	2.2000

$$\lim_{x \to 0-} f(x) = -2.0000, \quad , \lim_{x \to 0+} f(x) = 2.0000, \quad , \lim_{x \to 0} f(x) = \textit{does not exist}, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-4	undefined	3	3	3	Discontinuous
	1	2	2	2	2	Continuous
	3	3	4	4	4	Discontinuous
	6	undefined	2	2	2	Discontinuous
	10	3	3	3	3	Continuous

LimitExercise01 Answers for No.9839

Ans01 >

x	48.8000	48.9000	48.9900	48.9990	48.9999	...	a = 49	...	49.0001	49.0010	49.0100	49.1000	49.2000
f(x)	-13.9857	-13.9929	-13.9993	-13.9999	-13.9997	...	f(49) = undefined	...	-13.9997	-14.0001	-14.0007	-14.0071	-14.0143

$\lim_{x \to 49-} f(x) = -14.0000$, , $\lim_{x \to 49+} f(x) = -14.0000$, , $\lim_{x \to 49} f(x) = -14.0000$, , " # f(x) is discontinuous at x = 49"

Ans02 >

x	2.8000	2.9000	2.9900	2.9990	2.9999	...	a = 3	...	3.0001	3.0010	3.0100	3.1000	3.2000
f(x)	7.8000	7.9000	7.9900	7.9990	7.9999	...	f(3) = undefined	...	8.0001	8.0010	8.0100	8.1000	8.2000

$\lim_{x \to 3-} f(x) = 8.0000$, , $\lim_{x \to 3+} f(x) = 8.0000$, , $\lim_{x \to 3} f(x) = 8.0000$, , " # f(x) is discontinuous at x = 3"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	1.0067	1.0017	1.0000	1.0000	1.0000	...	f(0) = undefined	...	1.0000	1.0000	1.0000	1.0017	1.0067

$\lim_{x \to 0-} f(x) = 1.0000$, , $\lim_{x \to 0+} f(x) = 1.0000$, , $\lim_{x \to 0} f(x) = 1.0000$, , " # f(x) is discontinuous at x = 0"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-3.6254	-3.8065	-3.9801	-3.9980	-3.9998	...	f(0) = undefined	...	-4.0002	-4.0020	-4.0201	-4.2068	-4.4281

$\lim_{x \to 0-} f(x) = -4.0000$, , $\lim_{x \to 0+} f(x) = -4.0000$, , $\lim_{x \to 0} f(x) = -4.0000$, , " # f(x) is discontinuous at x = 0"

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-2.8000	-2.9000	-2.9900	-2.9990	-2.9999	...	f(0) = undefined	...	3.0001	3.0010	3.0100	3.1000	3.2000

$\lim_{x \to 0-} f(x) = -3.0000$, , $\lim_{x \to 0+} f(x) = 3.0000$, , $\lim_{x \to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-9	4	4	-infinity	DNE	Discontinuous
	-6	5	3	3	3	Discontinuous
	-1	0	2	2	2	Discontinuous
	0	2	2	2	2	Continuous
	6	undefined	2	2	2	Discontinuous

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LimitExercise01 Answers for No.9843

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-3.2143	-3.1034	-3.0100	-3.0010	-3.0001	...	f(0) = undefined	...	2.9999	2.9990	2.9900	2.9032	2.8125

$\lim_{x \to 0-} f(x) = -3.0000$, , $\lim_{x \to 0+} f(x) = 3.0000$, , $\lim_{x \to 0} f(x) =$ *does not exist*, , " # f(x) is discontinuous at x = 0"

Ans02 >

x	6.8000	6.9000	6.9900	6.9990	6.9999	...	a = 7	...	7.0001	7.0010	7.0100	7.1000	7.2000
f(x)	10.8000	10.9000	10.9900	10.9990	10.9999	...	f(7) = undefined	...	11.0001	11.0010	11.0100	11.1000	11.2000

$\lim_{x \to 7-} f(x) = 11.0000$, , $\lim_{x \to 7+} f(x) = 11.0000$, , $\lim_{x \to 7} f(x) = 11.0000$, , " # f(x) is discontinuous at x = 7"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-2.2067	-2.1017	-2.0100	-2.0010	-2.0001	...	f(0) = undefined	...	-1.9999	-1.9990	-1.9900	-1.9017	-1.8067

$\lim_{x \to 0-} f(x) = -2.0000$, , $\lim_{x \to 0+} f(x) = -2.0000$, , $\lim_{x \to 0} f(x) = -2.0000$, , " # f(x) is discontinuous at x = 0"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	1.0067	1.0017	1.0000	1.0000	1.0000	...	f(0) = undefined	...	1.0000	1.0000	1.0000	1.0017	1.0067

$\lim_{x \to 0-} f(x) = 1.0000$, , $\lim_{x \to 0+} f(x) = 1.0000$, , $\lim_{x \to 0} f(x) = 1.0000$, , " # f(x) is discontinuous at x = 0"

Ans05 >

x	8.8000	8.9000	8.9900	8.9990	8.9999	...	a = 9	...	9.0001	9.0010	9.0100	9.1000	9.2000
f(x)	-5.9665	-5.9833	-5.9983	-5.9998	-5.9999	...	f(9) = undefined	...	-5.9999	-6.0002	-6.0017	-6.0166	-6.0332

$\lim_{x \to 9-} f(x) = -6.0000$, , $\lim_{x \to 9+} f(x) = -6.0000$, , $\lim_{x \to 9} f(x) = -6.0000$, , " # f(x) is discontinuous at x = 9"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-10	4	4	4	4	Continuous
	-6	5	3	3	3	Discontinuous
	10	3	3	3	3	Continuous
	11	undefined	-infinity	-infinity	-infinity	Discontinuous
	12	4	4	4	4	Continuous

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LimitExercise01 Answers for No.9854

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.0997	0.0500	0.0050	0.0005	0.0000	...	f(0) = undefined	...	-0.0000	-0.0005	-0.0050	-0.0500	-0.0997

$\lim_{x\to 0-} f(x) = 0,\quad \lim_{x\to 0+} f(x) = 0,\quad \lim_{x\to 0} f(x) = 0,$ " # f(x) is discontinuous at x = 0"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-6.3444	-6.6614	-6.9651	-6.9965	-6.9996	...	f(0) = undefined	...	-7.0004	-7.0035	-7.0351	-7.3620	-7.7491

$\lim_{x\to 0-} f(x) = -7.0000,\quad \lim_{x\to 0+} f(x) = -7.0000,\quad \lim_{x\to 0} f(x) = -7.0000,$ " # f(x) is discontinuous at x = 0"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-3.2143	-3.1034	-3.0100	-3.0010	-3.0001	...	f(0) = undefined	...	2.9999	2.9990	2.9900	2.9032	2.8125

$\lim_{x\to 0-} f(x) = -3.0000,\quad \lim_{x\to 0+} f(x) = 3.0000,\quad \lim_{x\to 0} f(x) = \textit{does not exist},$ " # f(x) is discontinuous at x = 0"

Ans04 >

x	0.8000	0.9000	0.9900	0.9990	0.9999	...	a = 1	...	1.0001	1.0010	1.0100	1.1000	1.2000
f(x)	1.8944	1.9487	1.9950	1.9995	1.9999	...	f(1) = undefined	...	2.0000	2.0005	2.0050	2.0488	2.0954

$\lim_{x\to 1-} f(x) = 2.0000,\quad \lim_{x\to 1+} f(x) = 2.0000,\quad \lim_{x\to 1} f(x) = 2.0000,$ " # f(x) is discontinuous at x = 1"

Ans05 >

x	4.8000	4.9000	4.9900	4.9990	4.9999	...	a = 5	...	5.0001	5.0010	5.0100	5.1000	5.2000
f(x)	0.1724	0.1695	0.1669	0.1667	0.1667	...	f(5) = undefined	...	0.1667	0.1666	0.1664	0.1639	0.1613

$\lim_{x\to 5-} f(x) = 0.1667,\quad \lim_{x\to 5+} f(x) = 0.1667,\quad \lim_{x\to 5} f(x) = 0.1667,$ " # f(x) is discontinuous at x = 5"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-12	4	4	4	4	Continuous
	-10	4	4	4	4	Continuous
	5	3	3	3	3	Continuous
	8	2	2	2	2	Continuous
	9	5	5	5	5	Continuous

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LimitExercise01 Answers for No.9862

Ans01 >

x	4.8000	4.9000	4.9900	4.9990	4.9999	...	a = 5	...	5.0001	5.0010	5.0100	5.1000	5.2000
f(x)	0.8000	0.9000	0.9900	0.9990	0.9999	...	f(5) = undefined	...	1.0001	1.0010	1.0100	1.1000	1.2000

$\lim_{x \to 5-} f(x) = 1.0000,\ ,\ \lim_{x \to 5+} f(x) = 1.0000,\ ,\ \lim_{x \to 5} f(x) = 1.0000,\ ,$ " # f(x) is discontinuous at x = 5"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	3.6254	3.8065	3.9801	3.9980	3.9998	...	f(0) = undefined	...	4.0002	4.0020	4.0201	4.2068	4.4281

$\lim_{x \to 0-} f(x) = 4.0000,\ ,\ \lim_{x \to 0+} f(x) = 4.0000,\ ,\ \lim_{x \to 0} f(x) = 4.0000,\ ,$ " # f(x) is discontinuous at x = 0"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-3.7500	-3.3333	-3.0303	-3.0030	-3.0003	...	f(0) = undefined	...	2.9997	2.9970	2.9703	2.7273	2.5000

$\lim_{x \to 0-} f(x) = -3.0000,\ ,\ \lim_{x \to 0+} f(x) = 3.0000,\ ,\ \lim_{x \to 0} f(x) = \textit{does not exist},\ ,$ " # f(x) is discontinuous at x = 0"

Ans04 >

x	24.8000	24.9000	24.9900	24.9990	24.9999	...	a = 25	...	25.0001	25.0010	25.0100	25.1000	25.2000
f(x)	-9.9800	-9.9900	-9.9990	-9.9999	-10.0000	...	f(25) = undefined	...	-10.0000	-10.0001	-10.0010	-10.0100	-10.0200

$\lim_{x \to 25-} f(x) = -10.0000,\ ,\ \lim_{x \to 25+} f(x) = -10.0000,\ ,\ \lim_{x \to 25} f(x) = -10.0000,\ ,$ " # f(x) is discontinuous at x = 25"

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.0997	0.0500	0.0050	0.0005	0.0000	...	f(0) = undefined	...	-0.0000	-0.0005	-0.0050	-0.0500	-0.0997

$\lim_{x \to 0-} f(x) = 0,\ ,\ \lim_{x \to 0+} f(x) = 0,\ ,\ \lim_{x \to 0} f(x) = 0,\ ,$ " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	1	2	2	2	2	Continuous
	3	3	4	4	4	Discontinuous
	4	3	4	4	4	Discontinuous
	11	undefined	-infinity	-infinity	-infinity	Discontinuous
	12	4	4	4	4	Continuous

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LimitExercise01 Answers for No.10278

Ans01 >

x	35.8000	35.9000	35.9900	35.9990	35.9999	...	a = 36	...	36.0001	36.0010	36.0100	36.1000	36.2000
f(x)	-11.9833	-11.9917	-11.9992	-11.9999	-12.0005	...	f(36) = undefined	...	-12.0005	-12.0000	-12.0008	-12.0083	-12.0166

$\lim_{x \to 36-} f(x) = -12.0000,\ ,\ \lim_{x \to 36+} f(x) = -12.0000,\ ,\ \lim_{x \to 36} f(x) = -12.0000,$, " # f(x) is discontinuous at x = 36"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-2.8000	-2.9000	-2.9900	-2.9990	-2.9999	...	f(0) = undefined	...	3.0001	3.0010	3.0100	3.1000	3.2000

$\lim_{x \to 0-} f(x) = -3.0000,\ ,\ \lim_{x \to 0+} f(x) = 3.0000,\ ,\ \lim_{x \to 0} f(x) = \textit{does not exist},$, " # f(x) is discontinuous at x = 0"

Ans03 >

x	4.8000	4.9000	4.9900	4.9990	4.9999	...	a = 5	...	5.0001	5.0010	5.0100	5.1000	5.2000
f(x)	9.8000	9.9000	9.9900	9.9990	9.9999	...	f(5) = undefined	...	10.0001	10.0010	10.0100	10.1000	10.2000

$\lim_{x \to 5-} f(x) = 10.0000,\ ,\ \lim_{x \to 5+} f(x) = 10.0000,\ ,\ \lim_{x \to 5} f(x) = 10.0000,$, " # f(x) is discontinuous at x = 5"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	3.3100	3.1525	3.0150	3.0015	3.0002	...	f(0) = undefined	...	2.9999	2.9985	2.9850	2.8525	2.7100

$\lim_{x \to 0-} f(x) = 3.0000,\ ,\ \lim_{x \to 0+} f(x) = 3.0000,\ ,\ \lim_{x \to 0} f(x) = 3.0000,$, " # f(x) is discontinuous at x = 0"

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.0997	0.0500	0.0050	0.0005	0.0000	...	f(0) = undefined	...	-0.0000	-0.0005	-0.0050	-0.0500	-0.0997

$\lim_{x \to 0-} f(x) = 0,\ ,\ \lim_{x \to 0+} f(x) = 0,\ ,\ \lim_{x \to 0} f(x) = 0,$, " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-1	0	2	2	2	Discontinuous
	2	3	3	3	3	Continuous
	5	3	3	3	3	Continuous
	6	undefined	2	2	2	Discontinuous
	12	4	4	4	4	Continuous

LimitExercise01 Answers for No.10361

Ans01 >

x	5.8000	5.9000	5.9900	5.9990	5.9999	...	a = 6	...	6.0001	6.0010	6.0100	6.1000	6.2000
f(x)	0.3571	0.3448	0.3344	0.3334	0.3333	...	f(6) = undefined	...	0.3333	0.3332	0.3322	0.3226	0.3125

$$\lim_{x \to 6-} f(x) = 0.3333, \quad , \lim_{x \to 6+} f(x) = 0.3333, \quad , \lim_{x \to 6} f(x) = 0.3333, \quad ,\text{" \# f(x) is discontinuous at x = 6"}$$

Ans02 >

x	48.8000	48.9000	48.9900	48.9990	48.9999	...	a = 49	...	49.0001	49.0010	49.0100	49.1000	49.2000
f(x)	0.0715	0.0715	0.0714	0.0714	0.0714	...	f(49) = undefined	...	0.0714	0.0714	0.0714	0.0714	0.0714

$$\lim_{x \to 49-} f(x) = 0.0714, \quad , \lim_{x \to 49+} f(x) = 0.0714, \quad , \lim_{x \to 49} f(x) = 0.0714, \quad ,\text{" \# f(x) is discontinuous at x = 49"}$$

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	7.7233	7.3558	7.0351	7.0035	7.0004	...	f(0) = undefined	...	6.9997	6.9965	6.9651	6.6558	6.3233

$$\lim_{x \to 0-} f(x) = 7.0000, \quad , \lim_{x \to 0+} f(x) = 7.0000, \quad , \lim_{x \to 0} f(x) = 7.0000, \quad ,\text{" \# f(x) is discontinuous at x = 0"}$$

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	1.0067	1.0017	1.0000	1.0000	1.0000	...	f(0) = undefined	...	1.0000	1.0000	1.0000	1.0017	1.0067

$$\lim_{x \to 0-} f(x) = 1.0000, \quad , \lim_{x \to 0+} f(x) = 1.0000, \quad , \lim_{x \to 0} f(x) = 1.0000, \quad ,\text{" \# f(x) is discontinuous at x = 0"}$$

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.2500	-1.1111	-1.0101	-1.0010	-1.0001	...	f(0) = undefined	...	0.9999	0.9990	0.9901	0.9091	0.8333

$$\lim_{x \to 0-} f(x) = -1.0000, \quad , \lim_{x \to 0+} f(x) = 1.0000, \quad , \lim_{x \to 0} f(x) = \textit{does not exist}, \quad ,\text{" \# f(x) is discontinuous at x = 0"}$$

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-10	4	4	4	4	Continuous
	-9	4	4	-infinity	DNE	Discontinuous
	-1	0	2	2	2	Discontinuous
	2	3	3	3	3	Continuous
	7	1	1	1	1	Continuous

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LimitExercise01 Answers for No.10532

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.8000	-1.9000	-1.9900	-1.9990	-1.9999	...	f(0) = undefined	...	2.0001	2.0010	2.0100	2.1000	2.2000

$\lim_{x \to 0-} f(x) = -2.0000$, , $\lim_{x \to 0+} f(x) = 2.0000$, , $\lim_{x \to 0} f(x) =$ *does not exist*, , " # f(x) is discontinuous at x = 0"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-2.7190	-2.8549	-2.9850	-2.9985	-2.9998	...	f(0) = undefined	...	-3.0002	-3.0015	-3.0151	-3.1551	-3.3210

$\lim_{x \to 0-} f(x) = -3.0000$, , $\lim_{x \to 0+} f(x) = -3.0000$, , $\lim_{x \to 0} f(x) = -3.0000$, , " # f(x) is discontinuous at x = 0"

Ans03 >

x	48.8000	48.9000	48.9900	48.9990	48.9999	...	a = 49	...	49.0001	49.0010	49.0100	49.1000	49.2000
f(x)	0.0715	0.0715	0.0714	0.0714	0.0714	...	f(49) = undefined	...	0.0714	0.0714	0.0714	0.0714	0.0714

$\lim_{x \to 49-} f(x) = 0.0714$, , $\lim_{x \to 49+} f(x) = 0.0714$, , $\lim_{x \to 49} f(x) = 0.0714$, , " # f(x) is discontinuous at x = 49"

Ans04 >

x	6.8000	6.9000	6.9900	6.9990	6.9999	...	a = 7	...	7.0001	7.0010	7.0100	7.1000	7.2000
f(x)	10.8000	10.9000	10.9900	10.9990	10.9999	...	f(7) = undefined	...	11.0001	11.0010	11.0100	11.1000	11.2000

$\lim_{x \to 7-} f(x) = 11.0000$, , $\lim_{x \to 7+} f(x) = 11.0000$, , $\lim_{x \to 7} f(x) = 11.0000$, , " # f(x) is discontinuous at x = 7"

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.0997	0.0500	0.0050	0.0005	0.0000	...	f(0) = undefined	...	-0.0000	-0.0005	-0.0050	-0.0500	-0.0997

$\lim_{x \to 0-} f(x) = 0$, , $\lim_{x \to 0+} f(x) = 0$, , $\lim_{x \to 0} f(x) = 0$, , " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-1	0	2	2	2	Discontinuous
	4	3	4	4	4	Discontinuous
	5	3	3	3	3	Continuous
	6	undefined	2	2	2	Discontinuous
	8	2	2	2	2	Continuous

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LimitExercise01 Answers for No.10688

Ans01 >

x	1.8000	1.9000	1.9900	1.9990	1.9999	...	a = 2	...	2.0001	2.0010	2.0100	2.1000	2.2000
f(x)	-0.1923	-0.1961	-0.1996	-0.2000	-0.2000	...	f(2) = undefined	...	-0.2000	-0.2000	-0.2004	-0.2041	-0.2083

$$\lim_{x\to 2-} f(x) = -0.2000, \quad , \lim_{x\to 2+} f(x) = -0.2000, \quad , \lim_{x\to 2} f(x) = -0.2000, \quad , \text{" \# f(x) is discontinuous at x = 2"}$$

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.0997	-0.0500	-0.0050	-0.0005	-0.0000	...	f(0) = undefined	...	0.0000	0.0005	0.0050	0.0500	0.0997

$$\lim_{x\to 0-} f(x) = 0, \quad , \lim_{x\to 0+} f(x) = 0, \quad , \lim_{x\to 0} f(x) = 0, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans03 >

x	3.8000	3.9000	3.9900	3.9990	3.9999	...	a = 4	...	4.0001	4.0010	4.0100	4.1000	4.2000
f(x)	0.2532	0.2516	0.2502	0.2500	0.2500	...	f(4) = undefined	...	0.2500	0.2500	0.2498	0.2485	0.2470

$$\lim_{x\to 4-} f(x) = 0.2500, \quad , \lim_{x\to 4+} f(x) = 0.2500, \quad , \lim_{x\to 4} f(x) = 0.2500, \quad , \text{" \# f(x) is discontinuous at x = 4"}$$

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-4.5317	-4.7581	-4.9751	-4.9975	-4.9998	...	f(0) = undefined	...	-5.0002	-5.0025	-5.0251	-5.2585	-5.5351

$$\lim_{x\to 0-} f(x) = -5.0000, \quad , \lim_{x\to 0+} f(x) = -5.0000, \quad , \lim_{x\to 0} f(x) = -5.0000, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.8000	-1.9000	-1.9900	-1.9990	-1.9999	...	f(0) = undefined	...	2.0001	2.0010	2.0100	2.1000	2.2000

$$\lim_{x\to 0-} f(x) = -2.0000, \quad , \lim_{x\to 0+} f(x) = 2.0000, \quad , \lim_{x\to 0} f(x) = \textit{does not exist}, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-12	4	4	4	4	Continuous
	-11	-2	3	4	DNE	Discontinuous
	0	2	2	2	2	Continuous
	3	3	4	4	4	Discontinuous
	9	5	5	5	5	Continuous

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LimitExercise01 Answers for No.10868

Ans01 >

```
   x |  1.8000|  1.9000|  1.9900|  1.9990|  1.9999|...|   a =  2        |...|  2.0001|  2.0010|  2.0100|  2.1000|  2.2000|
f(x)|  0.3571|  0.3448|  0.3344|  0.3334|  0.3333|...|f( 2) = undefined|...|  0.3333|  0.3332|  0.3322|  0.3226|  0.3125|
```

$\lim_{x \to 2-} f(x) = 0.3333,\ ,\ \lim_{x \to 2+} f(x) = 0.3333,\ ,\ \lim_{x \to 2} f(x) = 0.3333,\ ,$ " # f(x) is discontinuous at x = 2"

Ans02 >

```
   x | -0.2000| -0.1000| -0.0100| -0.0010| -0.0001|...|   a =  0        |...|  0.0001|  0.0010|  0.0100|  0.1000|  0.2000|
f(x)|  3.3100|  3.1525|  3.0150|  3.0015|  3.0002|...|f( 0) = undefined|...|  2.9999|  2.9985|  2.9850|  2.8525|  2.7100|
```

$\lim_{x \to 0-} f(x) = 3.0000,\ ,\ \lim_{x \to 0+} f(x) = 3.0000,\ ,\ \lim_{x \to 0} f(x) = 3.0000,\ ,$ " # f(x) is discontinuous at x = 0"

Ans03 >

```
   x | -0.2000| -0.1000| -0.0100| -0.0010| -0.0001|...|   a =  0        |...|  0.0001|  0.0010|  0.0100|  0.1000|  0.2000|
f(x)| -0.0997| -0.0500| -0.0050| -0.0005| -0.0000|...|f( 0) = undefined|...|  0.0000|  0.0005|  0.0050|  0.0500|  0.0997|
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$\lim_{x \to 0-} f(x) = 0,\ ,\ \lim_{x \to 0+} f(x) = 0,\ ,\ \lim_{x \to 0} f(x) = 0,\ ,$ " # f(x) is discontinuous at x = 0"

Ans04 >

```
   x |  0.8000|  0.9000|  0.9900|  0.9990|  0.9999|...|   a =  1        |...|  1.0001|  1.0010|  1.0100|  1.1000|  1.2000|
f(x)| -1.8944| -1.9487| -1.9950| -1.9995| -1.9999|...|f( 1) = undefined|...| -2.0000| -2.0005| -2.0050| -2.0488| -2.0954|
```

$\lim_{x \to 1-} f(x) = -2.0000,\ ,\ \lim_{x \to 1+} f(x) = -2.0000,\ ,\ \lim_{x \to 1} f(x) = -2.0000,\ ,$ " # f(x) is discontinuous at x = 1"

Ans05 >

```
   x | -0.2000| -0.1000| -0.0100| -0.0010| -0.0001|...|   a =  0        |...|  0.0001|  0.0010|  0.0100|  0.1000|  0.2000|
f(x)| -1.8000| -1.9000| -1.9900| -1.9990| -1.9999|...|f( 0) = undefined|...|  2.0001|  2.0010|  2.0100|  2.1000|  2.2000|
```

$\lim_{x \to 0-} f(x) = -2.0000,\ ,\ \lim_{x \to 0+} f(x) = 2.0000,\ ,\ \lim_{x \to 0} f(x) = \textit{does not exist},\ ,$ " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-11	-2	3	4	DNE	Discontinuous
	-8	3	3	3	3	Continuous
	4	3	4	4	4	Discontinuous
	8	2	2	2	2	Continuous
	11	undefined	-infinity	-infinity	-infinity	Discontinuous

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LimitExercise01 Answers for No.10900

Ans01 >

x	63.8000	63.9000	63.9900	63.9990	63.9999	...	a = 64	...	64.0001	64.0010	64.0100	64.1000	64.2000
f(x)	-0.0625	-0.0625	-0.0625	-0.0625	-0.0625	...	f(64) = undefined	...	-0.0625	-0.0625	-0.0625	-0.0625	-0.0625

$\lim_{x \to 64-} f(x) = -0.0625$, , $\lim_{x \to 64+} f(x) = -0.0625$, , $\lim_{x \to 64} f(x) = -0.0625$, , " # f(x) is discontinuous at x = 64"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.9063	-0.9516	-0.9950	-0.9995	-1.0000	...	f(0) = undefined	...	-1.0000	-1.0005	-1.0050	-1.0517	-1.1070

$\lim_{x \to 0-} f(x) = -1.0000$, , $\lim_{x \to 0+} f(x) = -1.0000$, , $\lim_{x \to 0} f(x) = -1.0000$, , " # f(x) is discontinuous at x = 0"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.2500	-1.1111	-1.0101	-1.0010	-1.0001	...	f(0) = undefined	...	0.9999	0.9990	0.9901	0.9091	0.8333

$\lim_{x \to 0-} f(x) = -1.0000$, , $\lim_{x \to 0+} f(x) = 1.0000$, , $\lim_{x \to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.0997	0.0500	0.0050	0.0005	0.0000	...	f(0) = undefined	...	-0.0000	-0.0005	-0.0050	-0.0500	-0.0997

$\lim_{x \to 0-} f(x) = 0$, , $\lim_{x \to 0+} f(x) = 0$, , $\lim_{x \to 0} f(x) = 0$, , " # f(x) is discontinuous at x = 0"

Ans05 >

x	6.8000	6.9000	6.9900	6.9990	6.9999	...	a = 7	...	7.0001	7.0010	7.0100	7.1000	7.2000
f(x)	0.1282	0.1266	0.1252	0.1250	0.1250	...	f(7) = undefined	...	0.1250	0.1250	0.1248	0.1235	0.1220

$\lim_{x \to 7-} f(x) = 0.1250$, , $\lim_{x \to 7+} f(x) = 0.1250$, , $\lim_{x \to 7} f(x) = 0.1250$, , " # f(x) is discontinuous at x = 7"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-9	4	4	-infinity	DNE	Discontinuous
	1	2	2	2	2	Continuous
	3	3	4	4	4	Discontinuous
	8	2	2	2	2	Continuous
	12	4	4	4	4	Continuous

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LimitExercise01 Answers for No.11693

Ans01 >

x	0.8000	0.9000	0.9900	0.9990	0.9999	...	a = 1	...	1.0001	1.0010	1.0100	1.1000	1.2000
f(x)	1.8944	1.9487	1.9950	1.9995	1.9999	...	f(1) = undefined	...	2.0000	2.0005	2.0050	2.0488	2.0954

$\lim_{x \to 1-} f(x) = 2.0000$, , $\lim_{x \to 1+} f(x) = 2.0000$, , $\lim_{x \to 1} f(x) = 2.0000$, , " # f(x) is discontinuous at x = 1"

Ans02 >

x	3.8000	3.9000	3.9900	3.9990	3.9999	...	a = 4	...	4.0001	4.0010	4.0100	4.1000	4.2000
f(x)	-2.2000	-2.1000	-2.0100	-2.0010	-2.0001	...	f(4) = undefined	...	-1.9999	-1.9990	-1.9900	-1.9000	-1.8000

$\lim_{x \to 4-} f(x) = -2.0000$, , $\lim_{x \to 4+} f(x) = -2.0000$, , $\lim_{x \to 4} f(x) = -2.0000$, , " # f(x) is discontinuous at x = 4"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.8000	-1.9000	-1.9900	-1.9990	-1.9999	...	f(0) = undefined	...	2.0001	2.0010	2.0100	2.1000	2.2000

$\lim_{x \to 0-} f(x) = -2.0000$, , $\lim_{x \to 0+} f(x) = 2.0000$, , $\lim_{x \to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.9933	0.9983	1.0000	1.0000	1.0000	...	f(0) = undefined	...	1.0000	1.0000	1.0000	0.9983	0.9933

$\lim_{x \to 0-} f(x) = 1.0000$, , $\lim_{x \to 0+} f(x) = 1.0000$, , $\lim_{x \to 0} f(x) = 1.0000$, , " # f(x) is discontinuous at x = 0"

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.8127	-1.9033	-1.9900	-1.9990	-1.9999	...	f(0) = undefined	...	-2.0001	-2.0010	-2.0100	-2.1034	-2.2140

$\lim_{x \to 0-} f(x) = -2.0000$, , $\lim_{x \to 0+} f(x) = -2.0000$, , $\lim_{x \to 0} f(x) = -2.0000$, , " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-10	4	4	4	4	Continuous
	1	2	2	2	2	Continuous
	3	3	4	4	4	Discontinuous
	6	undefined	2	2	2	Discontinuous
	8	2	2	2	2	Continuous

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LimitExercise01 Answers for No.12097

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.0997	-0.0500	-0.0050	-0.0005	-0.0000	...	f(0) = undefined	...	0.0000	0.0005	0.0050	0.0500	0.0997

$$\lim_{x \to 0-} f(x) = 0, \quad , \lim_{x \to 0+} f(x) = 0, \quad , \lim_{x \to 0} f(x) = 0, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans02 >

x	35.8000	35.9000	35.9900	35.9990	35.9999	...	a = 36	...	36.0001	36.0010	36.0100	36.1000	36.2000
f(x)	-11.9833	-11.9917	-11.9992	-11.9999	-12.0005	...	f(36) = undefined	...	-12.0005	-12.0000	-12.0008	-12.0083	-12.0166

$$\lim_{x \to 36-} f(x) = -12.0000, \quad , \lim_{x \to 36+} f(x) = -12.0000, \quad , \lim_{x \to 36} f(x) = -12.0000, \quad , \text{" \# f(x) is discontinuous at x = 36"}$$

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.0714	-1.0345	-1.0033	-1.0003	-1.0000	...	f(0) = undefined	...	1.0000	0.9997	0.9967	0.9677	0.9375

$$\lim_{x \to 0-} f(x) = -1.0000, \quad , \lim_{x \to 0+} f(x) = 1.0000, \quad , \lim_{x \to 0} f(x) = \textit{does not exist}, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans04 >

x	1.8000	1.9000	1.9900	1.9990	1.9999	...	a = 2	...	2.0001	2.0010	2.0100	2.1000	2.2000
f(x)	-1.2000	-1.1000	-1.0100	-1.0010	-1.0001	...	f(2) = undefined	...	-0.9999	-0.9990	-0.9900	-0.9000	-0.8000

$$\lim_{x \to 2-} f(x) = -1.0000, \quad , \lim_{x \to 2+} f(x) = -1.0000, \quad , \lim_{x \to 2} f(x) = -1.0000, \quad , \text{" \# f(x) is discontinuous at x = 2"}$$

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.8127	-1.9033	-1.9900	-1.9990	-1.9999	...	f(0) = undefined	...	-2.0001	-2.0010	-2.0100	-2.1034	-2.2140

$$\lim_{x \to 0-} f(x) = -2.0000, \quad , \lim_{x \to 0+} f(x) = -2.0000, \quad , \lim_{x \to 0} f(x) = -2.0000, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-10	4	4	4	4	Continuous
	2	3	3	3	3	Continuous
	4	3	4	4	4	Discontinuous
	9	5	5	5	5	Continuous
	10	3	3	3	3	Continuous

LimitExercise01 Answers for No.12172

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	7.7233	7.3558	7.0351	7.0035	7.0004	...	f(0) = undefined	...	6.9997	6.9965	6.9651	6.6558	6.3233

$\lim_{x \to 0-} f(x) = 7.0000,\ ,\ \lim_{x \to 0+} f(x) = 7.0000,\ ,\ \lim_{x \to 0} f(x) = 7.0000,$, " # f(x) is discontinuous at x = 0"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.2500	-1.1111	-1.0101	-1.0010	-1.0001	...	f(0) = undefined	...	0.9999	0.9990	0.9901	0.9091	0.8333

$\lim_{x \to 0-} f(x) = -1.0000,\ ,\ \lim_{x \to 0+} f(x) = 1.0000,\ ,\ \lim_{x \to 0} f(x) = \textit{does not exist},$, " # f(x) is discontinuous at x = 0"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.0997	0.0500	0.0050	0.0005	0.0000	...	f(0) = undefined	...	-0.0000	-0.0005	-0.0050	-0.0500	-0.0997

$\lim_{x \to 0-} f(x) = 0,\ ,\ \lim_{x \to 0+} f(x) = 0,\ ,\ \lim_{x \to 0} f(x) = 0,$, " # f(x) is discontinuous at x = 0"

Ans04 >

x	0.8000	0.9000	0.9900	0.9990	0.9999	...	a = 1	...	1.0001	1.0010	1.0100	1.1000	1.2000
f(x)	0.5556	0.5263	0.5025	0.5003	0.5000	...	f(1) = undefined	...	0.5000	0.4998	0.4975	0.4762	0.4545

$\lim_{x \to 1-} f(x) = 0.5000,\ ,\ \lim_{x \to 1+} f(x) = 0.5000,\ ,\ \lim_{x \to 1} f(x) = 0.5000,$, " # f(x) is discontinuous at x = 1"

Ans05 >

x	0.8000	0.9000	0.9900	0.9990	0.9999	...	a = 1	...	1.0001	1.0010	1.0100	1.1000	1.2000
f(x)	-1.8944	-1.9487	-1.9950	-1.9995	-1.9999	...	f(1) = undefined	...	-2.0000	-2.0005	-2.0050	-2.0488	-2.0954

$\lim_{x \to 1-} f(x) = -2.0000,\ ,\ \lim_{x \to 1+} f(x) = -2.0000,\ ,\ \lim_{x \to 1} f(x) = -2.0000,$, " # f(x) is discontinuous at x = 1"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-12	4	4	4	4	Continuous
	-9	4	4	-infinity	DNE	Discontinuous
	-1	0	2	2	2	Discontinuous
	0	2	2	2	2	Continuous
	12	4	4	4	4	Continuous

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LimitExercise01 Answers for No.12173

Ans01 >

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    x | -0.2000| -0.1000| -0.0100| -0.0010| -0.0001|...|   a =  0        |...|  0.0001|  0.0010|  0.0100|  0.1000|  0.2000|
 f(x)|  0.9933|  0.9983|  1.0000|  1.0000|  1.0000|...|f( 0) = undefined|...|  1.0000|  1.0000|  1.0000|  0.9983|  0.9933|
```

$\lim_{x \to 0-} f(x) = 1.0000$, , $\lim_{x \to 0+} f(x) = 1.0000$, , $\lim_{x \to 0} f(x) = 1.0000$, ," # f(x) is discontinuous at x = 0"

Ans02 >

```
    x | -0.2000| -0.1000| -0.0100| -0.0010| -0.0001|...|   a =  0        |...|  0.0001|  0.0010|  0.0100|  0.1000|  0.2000|
 f(x)| -2.8000| -2.9000| -2.9900| -2.9990| -2.9999|...|f( 0) = undefined|...|  3.0001|  3.0010|  3.0100|  3.1000|  3.2000|
```

$\lim_{x \to 0-} f(x) = -3.0000$, , $\lim_{x \to 0+} f(x) = 3.0000$, , $\lim_{x \to 0} f(x) =$ *does not exist*, ," # f(x) is discontinuous at x = 0"

Ans03 >

```
    x | -0.2000| -0.1000| -0.0100| -0.0010| -0.0001|...|   a =  0        |...|  0.0001|  0.0010|  0.0100|  0.1000|  0.2000|
 f(x)| -2.2067| -2.1017| -2.0100| -2.0010| -2.0001|...|f( 0) = undefined|...| -1.9999| -1.9990| -1.9900| -1.9017| -1.8067|
```

$\lim_{x \to 0-} f(x) = -2.0000$, , $\lim_{x \to 0+} f(x) = -2.0000$, , $\lim_{x \to 0} f(x) = -2.0000$, ," # f(x) is discontinuous at x = 0"

Ans04 >

```
    x | 63.8000| 63.9000| 63.9900| 63.9990| 63.9999|...|   a =  64       |...| 64.0001| 64.0010| 64.0100| 64.1000| 64.2000|
 f(x)|-15.9875|-15.9937|-15.9994|-16.0000|-16.0000|...|f(64) = undefined|...|-16.0000|-16.0000|-16.0006|-16.0062|-16.0125|
```

$\lim_{x \to 64-} f(x) = -16.0000$, , $\lim_{x \to 64+} f(x) = -16.0000$, , $\lim_{x \to 64} f(x) = -16.0000$, ," # f(x) is discontinuous at x = 64"

Ans05 >

```
    x |  3.8000|  3.9000|  3.9900|  3.9990|  3.9999|...|   a =  4        |...|  4.0001|  4.0010|  4.0100|  4.1000|  4.2000|
 f(x)|  1.2500|  1.1111|  1.0101|  1.0010|  1.0001|...|f( 4) = undefined|...|  0.9999|  0.9990|  0.9901|  0.9091|  0.8333|
```

$\lim_{x \to 4-} f(x) = 1.0000$, , $\lim_{x \to 4+} f(x) = 1.0000$, , $\lim_{x \to 4} f(x) = 1.0000$, ," # f(x) is discontinuous at x = 4"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-9	4	4	-infinity	DNE	Discontinuous
	-1	0	2	2	2	Discontinuous
	0	2	2	2	2	Continuous
	1	2	2	2	2	Continuous
	6	undefined	2	2	2	Discontinuous

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LimitExercise01 Answers for No.12180

Ans01 >

x	3.8000	3.9000	3.9900	3.9990	3.9999	...	a = 4	...	4.0001	4.0010	4.0100	4.1000	4.2000
f(x)	0.8000	0.9000	0.9900	0.9990	0.9999	...	f(4) = undefined	...	1.0001	1.0010	1.0100	1.1000	1.2000

$\lim_{x\to 4-} f(x) = 1.0000$, , $\lim_{x\to 4+} f(x) = 1.0000$, , $\lim_{x\to 4} f(x) = 1.0000$, , " # f(x) is discontinuous at x = 4"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	3.3100	3.1525	3.0150	3.0015	3.0002	...	f(0) = undefined	...	2.9999	2.9985	2.9850	2.8525	2.7100

$\lim_{x\to 0-} f(x) = 3.0000$, , $\lim_{x\to 0+} f(x) = 3.0000$, , $\lim_{x\to 0} f(x) = 3.0000$, , " # f(x) is discontinuous at x = 0"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-2.5000	-2.2222	-2.0202	-2.0020	-2.0002	...	f(0) = undefined	...	1.9998	1.9980	1.9802	1.8182	1.6667

$\lim_{x\to 0-} f(x) = -2.0000$, , $\lim_{x\to 0+} f(x) = 2.0000$, , $\lim_{x\to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

Ans04 >

x	3.8000	3.9000	3.9900	3.9990	3.9999	...	a = 4	...	4.0001	4.0010	4.0100	4.1000	4.2000
f(x)	-0.2532	-0.2516	-0.2502	-0.2500	-0.2500	...	f(4) = undefined	...	-0.2500	-0.2500	-0.2498	-0.2485	-0.2470

$\lim_{x\to 4-} f(x) = -0.2500$, , $\lim_{x\to 4+} f(x) = -0.2500$, , $\lim_{x\to 4} f(x) = -0.2500$, , " # f(x) is discontinuous at x = 4"

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	1.0067	1.0017	1.0000	1.0000	1.0000	...	f(0) = undefined	...	1.0000	1.0000	1.0000	1.0017	1.0067

$\lim_{x\to 0-} f(x) = 1.0000$, , $\lim_{x\to 0+} f(x) = 1.0000$, , $\lim_{x\to 0} f(x) = 1.0000$, , " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-9	4	4	-infinity	DNE	Discontinuous
	-2	3	3	3	3	Continuous
	3	3	4	4	4	Discontinuous
	4	3	4	4	4	Discontinuous
	6	undefined	2	2	2	Discontinuous

LimitExercise01 Answers for No.12256

Ans01 >

x	63.8000	63.9000	63.9900	63.9990	63.9999	...	a = 64	...	64.0001	64.0010	64.0100	64.1000	64.2000
f(x)	15.9875	15.9937	15.9994	16.0000	16.0000	...	f(64) = undefined	...	16.0000	16.0000	16.0006	16.0062	16.0125

$\lim_{x \to 64-} f(x) = 16.0000$, , $\lim_{x \to 64+} f(x) = 16.0000$, , $\lim_{x \to 64} f(x) = 16.0000$, , " # f(x) is discontinuous at x = 64"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.8000	-0.9000	-0.9900	-0.9990	-0.9999	...	f(0) = undefined	...	1.0001	1.0010	1.0100	1.1000	1.2000

$\lim_{x \to 0-} f(x) = -1.0000$, , $\lim_{x \to 0+} f(x) = 1.0000$, , $\lim_{x \to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.0997	-0.0500	-0.0050	-0.0005	-0.0000	...	f(0) = undefined	...	0.0000	0.0005	0.0050	0.0500	0.0997

$\lim_{x \to 0-} f(x) = 0$, , $\lim_{x \to 0+} f(x) = 0$, , $\lim_{x \to 0} f(x) = 0$, , " # f(x) is discontinuous at x = 0"

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.9063	-0.9516	-0.9950	-0.9995	-1.0000	...	f(0) = undefined	...	-1.0000	-1.0005	-1.0050	-1.0517	-1.1070

$\lim_{x \to 0-} f(x) = -1.0000$, , $\lim_{x \to 0+} f(x) = -1.0000$, , $\lim_{x \to 0} f(x) = -1.0000$, , " # f(x) is discontinuous at x = 0"

Ans05 >

x	5.8000	5.9000	5.9900	5.9990	5.9999	...	a = 6	...	6.0001	6.0010	6.0100	6.1000	6.2000
f(x)	0.0926	0.0917	0.0910	0.0909	0.0909	...	f(6) = undefined	...	0.0909	0.0909	0.0908	0.0901	0.0893

$\lim_{x \to 6-} f(x) = 0.0909$, , $\lim_{x \to 6+} f(x) = 0.0909$, , $\lim_{x \to 6} f(x) = 0.0909$, , " # f(x) is discontinuous at x = 6"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-8	3	3	3	3	Continuous
	-6	5	3	3	3	Discontinuous
	-3	0	infinity	4	DNE	Discontinuous
	7	1	1	1	1	Continuous
	10	3	3	3	3	Continuous

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LimitExercise01 Answers for No.12278

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	2.2067	2.1017	2.0100	2.0010	2.0001	...	f(0) = undefined	...	1.9999	1.9990	1.9900	1.9017	1.8067

$\lim_{x \to 0-} f(x) = 2.0000,\ ,\ \lim_{x \to 0+} f(x) = 2.0000,\ ,\ \lim_{x \to 0} f(x) = 2.0000,$, " # f(x) is discontinuous at x = 0"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.8000	-0.9000	-0.9900	-0.9990	-0.9999	...	f(0) = undefined	...	1.0001	1.0010	1.0100	1.1000	1.2000

$\lim_{x \to 0-} f(x) = -1.0000,\ ,\ \lim_{x \to 0+} f(x) = 1.0000,\ ,\ \lim_{x \to 0} f(x) = \textit{does not exist},$, " # f(x) is discontinuous at x = 0"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.0997	0.0500	0.0050	0.0005	0.0000	...	f(0) = undefined	...	-0.0000	-0.0005	-0.0050	-0.0500	-0.0997

$\lim_{x \to 0-} f(x) = 0,\ ,\ \lim_{x \to 0+} f(x) = 0,\ ,\ \lim_{x \to 0} f(x) = 0,$, " # f(x) is discontinuous at x = 0"

Ans04 >

x	3.8000	3.9000	3.9900	3.9990	3.9999	...	a = 4	...	4.0001	4.0010	4.0100	4.1000	4.2000
f(x)	-3.9494	-3.9748	-3.9975	-3.9997	-4.0000	...	f(4) = undefined	...	-4.0000	-4.0003	-4.0025	-4.0248	-4.0494

$\lim_{x \to 4-} f(x) = -4.0000,\ ,\ \lim_{x \to 4+} f(x) = -4.0000,\ ,\ \lim_{x \to 4} f(x) = -4.0000,$, " # f(x) is discontinuous at x = 4"

Ans05 >

x	1.8000	1.9000	1.9900	1.9990	1.9999	...	a = 2	...	2.0001	2.0010	2.0100	2.1000	2.2000
f(x)	-0.8333	-0.9091	-0.9901	-0.9990	-0.9999	...	f(2) = undefined	...	-1.0001	-1.0010	-1.0101	-1.1111	-1.2500

$\lim_{x \to 2-} f(x) = -1.0000,\ ,\ \lim_{x \to 2+} f(x) = -1.0000,\ ,\ \lim_{x \to 2} f(x) = -1.0000,$, " # f(x) is discontinuous at x = 2"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-12	4	4	4	4	Continuous
	-9	4	4	-infinity	DNE	Discontinuous
	-2	3	3	3	3	Continuous
	1	2	2	2	2	Continuous
	6	undefined	2	2	2	Discontinuous

LimitExercise01 Answers for No.12482

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	7.7233	7.3558	7.0351	7.0035	7.0004	...	f(0) = undefined	...	6.9997	6.9965	6.9651	6.6558	6.3233

$\lim_{x \to 0-} f(x) = 7.0000$, , $\lim_{x \to 0+} f(x) = 7.0000$, , $\lim_{x \to 0} f(x) = 7.0000$, , " # f(x) is discontinuous at x = 0"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.0997	-0.0500	-0.0050	-0.0005	-0.0000	...	f(0) = undefined	...	0.0000	0.0005	0.0050	0.0500	0.0997

$\lim_{x \to 0-} f(x) = 0$, , $\lim_{x \to 0+} f(x) = 0$, , $\lim_{x \to 0} f(x) = 0$, , " # f(x) is discontinuous at x = 0"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-3.2143	-3.1034	-3.0100	-3.0010	-3.0001	...	f(0) = undefined	...	2.9999	2.9990	2.9900	2.9032	2.8125

$\lim_{x \to 0-} f(x) = -3.0000$, , $\lim_{x \to 0+} f(x) = 3.0000$, , $\lim_{x \to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

Ans04 >

x	1.8000	1.9000	1.9900	1.9990	1.9999	...	a = 2	...	2.0001	2.0010	2.0100	2.1000	2.2000
f(x)	4.8000	4.9000	4.9900	4.9990	4.9999	...	f(2) = undefined	...	5.0001	5.0010	5.0100	5.1000	5.2000

$\lim_{x \to 2-} f(x) = 5.0000$, , $\lim_{x \to 2+} f(x) = 5.0000$, , $\lim_{x \to 2} f(x) = 5.0000$, , " # f(x) is discontinuous at x = 2"

Ans05 >

x	63.8000	63.9000	63.9900	63.9990	63.9999	...	a = 64	...	64.0001	64.0010	64.0100	64.1000	64.2000
f(x)	15.9875	15.9937	15.9994	16.0000	16.0000	...	f(64) = undefined	...	16.0000	16.0000	16.0006	16.0062	16.0125

$\lim_{x \to 64-} f(x) = 16.0000$, , $\lim_{x \to 64+} f(x) = 16.0000$, , $\lim_{x \to 64} f(x) = 16.0000$, , " # f(x) is discontinuous at x = 64"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-12	4	4	4	4	Continuous
	-9	4	4	-infinity	DNE	Discontinuous
	-2	3	3	3	3	Continuous
	5	3	3	3	3	Continuous
	6	undefined	2	2	2	Discontinuous

LimitExercise01 Answers for No.12586

Ans01 >

```
      x | -0.2000| -0.1000| -0.0100| -0.0010| -0.0001|...|   a =  0         |...|  0.0001|  0.0010|  0.0100|  0.1000|  0.2000|
   f(x)| -1.8000| -1.9000| -1.9900| -1.9990| -1.9999|...|f( 0) = undefined|...|  2.0001|  2.0010|  2.0100|  2.1000|  2.2000|
```

$\lim_{x \to 0-} f(x) = -2.0000$, , $\lim_{x \to 0+} f(x) = 2.0000$, , $\lim_{x \to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

Ans02 >

```
      x | -0.2000| -0.1000| -0.0100| -0.0010| -0.0001|...|   a =  0         |...|  0.0001|  0.0010|  0.0100|  0.1000|  0.2000|
   f(x)| -7.7233| -7.3558| -7.0351| -7.0035| -7.0004|...|f( 0) = undefined|...| -6.9997| -6.9965| -6.9651| -6.6558| -6.3233|
```

$\lim_{x \to 0-} f(x) = -7.0000$, , $\lim_{x \to 0+} f(x) = -7.0000$, , $\lim_{x \to 0} f(x) = -7.0000$, , " # f(x) is discontinuous at x = 0"

Ans03 >

```
      x | 15.8000| 15.9000| 15.9900| 15.9990| 15.9999|...|   a =  16        |...| 16.0001| 16.0010| 16.0100| 16.1000| 16.2000|
   f(x)| -7.9749| -7.9875| -7.9988| -7.9999| -8.0000|...|f(16) = undefined|...| -8.0000| -8.0001| -8.0012| -8.0125| -8.0249|
```

$\lim_{x \to 16-} f(x) = -8.0000$, , $\lim_{x \to 16+} f(x) = -8.0000$, , $\lim_{x \to 16} f(x) = -8.0000$, , " # f(x) is discontinuous at x = 16"

Ans04 >

```
      x | -0.2000| -0.1000| -0.0100| -0.0010| -0.0001|...|   a =  0         |...|  0.0001|  0.0010|  0.0100|  0.1000|  0.2000|
   f(x)| -0.0997| -0.0500| -0.0050| -0.0005| -0.0000|...|f( 0) = undefined|...|  0.0000|  0.0005|  0.0050|  0.0500|  0.0997|
```

$\lim_{x \to 0-} f(x) = 0$, , $\lim_{x \to 0+} f(x) = 0$, , $\lim_{x \to 0} f(x) = 0$, , " # f(x) is discontinuous at x = 0"

Ans05 >

```
      x |  0.8000|  0.9000|  0.9900|  0.9990|  0.9999|...|   a =  1         |...|  1.0001|  1.0010|  1.0100|  1.1000|  1.2000|
   f(x)| -0.1923| -0.1961| -0.1996| -0.2000| -0.2000|...|f( 1) = undefined|...| -0.2000| -0.2000| -0.2004| -0.2041| -0.2083|
```

$\lim_{x \to 1-} f(x) = -0.2000$, , $\lim_{x \to 1+} f(x) = -0.2000$, , $\lim_{x \to 1} f(x) = -0.2000$, , " # f(x) is discontinuous at x = 1"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-10	4	4	4	4	Continuous
	-4	undefined	3	3	3	Discontinuous
	-1	0	2	2	2	Discontinuous
	9	5	5	5	5	Continuous
	12	4	4	4	4	Continuous

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LimitExercise01 Answers for No.12677

Ans01 >

x	63.8000	63.9000	63.9900	63.9990	63.9999	...	a = 64	...	64.0001	64.0010	64.0100	64.1000	64.2000
f(x)	0.0625	0.0625	0.0625	0.0625	0.0625	...	f(64) = undefined	...	0.0625	0.0625	0.0625	0.0625	0.0625

$$\lim_{x \to 64-} f(x) = 0.0625, \quad , \lim_{x \to 64+} f(x) = 0.0625, \quad , \lim_{x \to 64} f(x) = 0.0625, \quad ,\text{" \# f(x) is discontinuous at x = 64"}$$

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.8000	-1.9000	-1.9900	-1.9990	-1.9999	...	f(0) = undefined	...	2.0001	2.0010	2.0100	2.1000	2.2000

$$\lim_{x \to 0-} f(x) = -2.0000, \quad , \lim_{x \to 0+} f(x) = 2.0000, \quad , \lim_{x \to 0} f(x) = \textit{does not exist}, \quad ,\text{" \# f(x) is discontinuous at x = 0"}$$

Ans03 >

x	1.8000	1.9000	1.9900	1.9990	1.9999	...	a = 2	...	2.0001	2.0010	2.0100	2.1000	2.2000
f(x)	0.1471	0.1449	0.1431	0.1429	0.1429	...	f(2) = undefined	...	0.1429	0.1428	0.1427	0.1408	0.1389

$$\lim_{x \to 2-} f(x) = 0.1429, \quad , \lim_{x \to 2+} f(x) = 0.1429, \quad , \lim_{x \to 2} f(x) = 0.1429, \quad ,\text{" \# f(x) is discontinuous at x = 2"}$$

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-3.6254	-3.8065	-3.9801	-3.9980	-3.9998	...	f(0) = undefined	...	-4.0002	-4.0020	-4.0201	-4.2068	-4.4281

$$\lim_{x \to 0-} f(x) = -4.0000, \quad , \lim_{x \to 0+} f(x) = -4.0000, \quad , \lim_{x \to 0} f(x) = -4.0000, \quad ,\text{" \# f(x) is discontinuous at x = 0"}$$

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.0997	0.0500	0.0050	0.0005	0.0000	...	f(0) = undefined	...	-0.0000	-0.0005	-0.0050	-0.0500	-0.0997

$$\lim_{x \to 0-} f(x) = 0, \quad , \lim_{x \to 0+} f(x) = 0, \quad , \lim_{x \to 0} f(x) = 0, \quad ,\text{" \# f(x) is discontinuous at x = 0"}$$

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-1	0	2	2	2	Discontinuous
	0	2	2	2	2	Continuous
	1	2	2	2	2	Continuous
	5	3	3	3	3	Continuous
	6	undefined	2	2	2	Discontinuous

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LimitExercise01 Answers for No.13490

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	1.0067	1.0017	1.0000	1.0000	1.0000	...	f(0) = undefined	...	1.0000	1.0000	1.0000	1.0017	1.0067

$\lim_{x \to 0-} f(x) = 1.0000$, , $\lim_{x \to 0+} f(x) = 1.0000$, , $\lim_{x \to 0} f(x) = 1.0000$, , " # f(x) is discontinuous at x = 0"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-2.1429	-2.0690	-2.0067	-2.0007	-2.0001	...	f(0) = undefined	...	1.9999	1.9993	1.9934	1.9355	1.8750

$\lim_{x \to 0-} f(x) = -2.0000$, , $\lim_{x \to 0+} f(x) = 2.0000$, , $\lim_{x \to 0} f(x) = \textit{does not exist}$, , " # f(x) is discontinuous at x = 0"

Ans03 >

x	0.8000	0.9000	0.9900	0.9990	0.9999	...	a = 1	...	1.0001	1.0010	1.0100	1.1000	1.2000
f(x)	0.1724	0.1695	0.1669	0.1667	0.1667	...	f(1) = undefined	...	0.1667	0.1666	0.1664	0.1639	0.1613

$\lim_{x \to 1-} f(x) = 0.1667$, , $\lim_{x \to 1+} f(x) = 0.1667$, , $\lim_{x \to 1} f(x) = 0.1667$, , " # f(x) is discontinuous at x = 1"

Ans04 >

x	24.8000	24.9000	24.9900	24.9990	24.9999	...	a = 25	...	25.0001	25.0010	25.0100	25.1000	25.2000
f(x)	9.9800	9.9900	9.9990	9.9999	10.0000	...	f(25) = undefined	...	10.0000	10.0001	10.0010	10.0100	10.0200

$\lim_{x \to 25-} f(x) = 10.0000$, , $\lim_{x \to 25+} f(x) = 10.0000$, , $\lim_{x \to 25} f(x) = 10.0000$, , " # f(x) is discontinuous at x = 25"

Ans05 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-3.3100	-3.1525	-3.0150	-3.0015	-3.0002	...	f(0) = undefined	...	-2.9999	-2.9985	-2.9850	-2.8525	-2.7100

$\lim_{x \to 0-} f(x) = -3.0000$, , $\lim_{x \to 0+} f(x) = -3.0000$, , $\lim_{x \to 0} f(x) = -3.0000$, , " # f(x) is discontinuous at x = 0"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-12	4	4	4	4	Continuous
	-6	5	3	3	3	Discontinuous
	3	3	4	4	4	Discontinuous
	8	2	2	2	2	Continuous
	9	5	5	5	5	Continuous

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LimitExercise01 Answers for No.13500

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	6.3444	6.6614	6.9651	6.9965	6.9996	...	f(0) = undefined	...	7.0004	7.0035	7.0351	7.3620	7.7491

$\lim\limits_{x\to 0-} f(x) = 7.0000,\ ,\ \lim\limits_{x\to 0+} f(x) = 7.0000,\ ,\ \lim\limits_{x\to 0} f(x) = 7.0000,$, " # f(x) is discontinuous at x = 0"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.9933	0.9983	1.0000	1.0000	1.0000	...	f(0) = undefined	...	1.0000	1.0000	1.0000	0.9983	0.9933

$\lim\limits_{x\to 0-} f(x) = 1.0000,\ ,\ \lim\limits_{x\to 0+} f(x) = 1.0000,\ ,\ \lim\limits_{x\to 0} f(x) = 1.0000,$, " # f(x) is discontinuous at x = 0"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.8000	-0.9000	-0.9900	-0.9990	-0.9999	...	f(0) = undefined	...	1.0001	1.0010	1.0100	1.1000	1.2000

$\lim\limits_{x\to 0-} f(x) = -1.0000,\ ,\ \lim\limits_{x\to 0+} f(x) = 1.0000,\ ,\ \lim\limits_{x\to 0} f(x) = \textit{does not exist},$, " # f(x) is discontinuous at x = 0"

Ans04 >

x	0.8000	0.9000	0.9900	0.9990	0.9999	...	a = 1	...	1.0001	1.0010	1.0100	1.1000	1.2000
f(x)	-0.5279	-0.5132	-0.5013	-0.5001	-0.5000	...	f(1) = undefined	...	-0.5000	-0.4999	-0.4988	-0.4881	-0.4772

$\lim\limits_{x\to 1-} f(x) = -0.5000,\ ,\ \lim\limits_{x\to 1+} f(x) = -0.5000,\ ,\ \lim\limits_{x\to 1} f(x) = -0.5000,$, " # f(x) is discontinuous at x = 1"

Ans05 >

x	3.8000	3.9000	3.9900	3.9990	3.9999	...	a = 4	...	4.0001	4.0010	4.0100	4.1000	4.2000
f(x)	2.8000	2.9000	2.9900	2.9990	2.9999	...	f(4) = undefined	...	3.0001	3.0010	3.0100	3.1000	3.2000

$\lim\limits_{x\to 4-} f(x) = 3.0000,\ ,\ \lim\limits_{x\to 4+} f(x) = 3.0000,\ ,\ \lim\limits_{x\to 4} f(x) = 3.0000,$, " # f(x) is discontinuous at x = 4"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-12	4	4	4	4	Continuous
	-6	5	3	3	3	Discontinuous
	3	3	4	4	4	Discontinuous
	7	1	1	1	1	Continuous
	12	4	4	4	4	Continuous

LimitExercise01 Answers for No.13637

Ans01 >

x	48.8000	48.9000	48.9900	48.9990	48.9999	...	a = 49	...	49.0001	49.0010	49.0100	49.1000	49.2000
f(x)	13.9857	13.9929	13.9993	13.9999	13.9997	...	f(49) = undefined	...	13.9997	14.0001	14.0007	14.0071	14.0143

$$\lim_{x \to 49-} f(x) = 14.0000, \quad , \lim_{x \to 49+} f(x) = 14.0000, \quad , \lim_{x \to 49} f(x) = 14.0000, \quad , \text{" \# f(x) is discontinuous at x = 49"}$$

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	0.0997	0.0500	0.0050	0.0005	0.0000	...	f(0) = undefined	...	-0.0000	-0.0005	-0.0050	-0.0500	-0.0997

$$\lim_{x \to 0-} f(x) = 0, \quad , \lim_{x \to 0+} f(x) = 0, \quad , \lim_{x \to 0} f(x) = 0, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-7.7233	-7.3558	-7.0351	-7.0035	-7.0004	...	f(0) = undefined	...	-6.9997	-6.9965	-6.9651	-6.6558	-6.3233

$$\lim_{x \to 0-} f(x) = -7.0000, \quad , \lim_{x \to 0+} f(x) = -7.0000, \quad , \lim_{x \to 0} f(x) = -7.0000, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans04 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-3.2143	-3.1034	-3.0100	-3.0010	-3.0001	...	f(0) = undefined	...	2.9999	2.9990	2.9900	2.9032	2.8125

$$\lim_{x \to 0-} f(x) = -3.0000, \quad , \lim_{x \to 0+} f(x) = 3.0000, \quad , \lim_{x \to 0} f(x) = \textit{does not exist}, \quad , \text{" \# f(x) is discontinuous at x = 0"}$$

Ans05 >

x	3.8000	3.9000	3.9900	3.9990	3.9999	...	a = 4	...	4.0001	4.0010	4.0100	4.1000	4.2000
f(x)	1.2500	1.1111	1.0101	1.0010	1.0001	...	f(4) = undefined	...	0.9999	0.9990	0.9901	0.9091	0.8333

$$\lim_{x \to 4-} f(x) = 1.0000, \quad , \lim_{x \to 4+} f(x) = 1.0000, \quad , \lim_{x \to 4} f(x) = 1.0000, \quad , \text{" \# f(x) is discontinuous at x = 4"}$$

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-4	undefined	3	3	3	Discontinuous
	-3	0	infinity	4	DNE	Discontinuous
	-2	3	3	3	3	Continuous
	0	2	2	2	2	Continuous
	4	3	4	4	4	Discontinuous

LimitExercise01 Answers for No.14015

Ans01 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.2500	-1.1111	-1.0101	-1.0010	-1.0001	...	f(0) = undefined	...	0.9999	0.9990	0.9901	0.9091	0.8333

$\lim_{x \to 0-} f(x) = -1.0000,\ ,\ \lim_{x \to 0+} f(x) = 1.0000,\ ,\ \lim_{x \to 0} f(x) = \textit{does not exist},$," # f(x) is discontinuous at x = 0"

Ans02 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-1.1033	-1.0508	-1.0050	-1.0005	-1.0001	...	f(0) = undefined	...	-1.0000	-0.9995	-0.9950	-0.9508	-0.9033

$\lim_{x \to 0-} f(x) = -1.0000,\ ,\ \lim_{x \to 0+} f(x) = -1.0000,\ ,\ \lim_{x \to 0} f(x) = -1.0000,$," # f(x) is discontinuous at x = 0"

Ans03 >

x	-0.2000	-0.1000	-0.0100	-0.0010	-0.0001	...	a = 0	...	0.0001	0.0010	0.0100	0.1000	0.2000
f(x)	-0.0997	-0.0500	-0.0050	-0.0005	-0.0000	...	f(0) = undefined	...	0.0000	0.0005	0.0050	0.0500	0.0997

$\lim_{x \to 0-} f(x) = 0,\ ,\ \lim_{x \to 0+} f(x) = 0,\ ,\ \lim_{x \to 0} f(x) = 0,$," # f(x) is discontinuous at x = 0"

Ans04 >

x	0.8000	0.9000	0.9900	0.9990	0.9999	...	a = 1	...	1.0001	1.0010	1.0100	1.1000	1.2000
f(x)	-1.8944	-1.9487	-1.9950	-1.9995	-1.9999	...	f(1) = undefined	...	-2.0000	-2.0005	-2.0050	-2.0488	-2.0954

$\lim_{x \to 1-} f(x) = -2.0000,\ ,\ \lim_{x \to 1+} f(x) = -2.0000,\ ,\ \lim_{x \to 1} f(x) = -2.0000,$," # f(x) is discontinuous at x = 1"

Ans05 >

x	4.8000	4.9000	4.9900	4.9990	4.9999	...	a = 5	...	5.0001	5.0010	5.0100	5.1000	5.2000
f(x)	7.8000	7.9000	7.9900	7.9990	7.9999	...	f(5) = undefined	...	8.0001	8.0010	8.0100	8.1000	8.2000

$\lim_{x \to 5-} f(x) = 8.0000,\ ,\ \lim_{x \to 5+} f(x) = 8.0000,\ ,\ \lim_{x \to 5} f(x) = 8.0000,$," # f(x) is discontinuous at x = 5"

	a	f(a)	LH-Limit	RH-Limit	Limit	Continuity
Ans06	-1	0	2	2	2	Discontinuous
	2	3	3	3	3	Continuous
	7	1	1	1	1	Continuous
	8	2	2	2	2	Continuous
	9	5	5	5	5	Continuous

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