Limits

Algebraic Calculations	Mixed Calculations	Properties	Piecewise Functions	Discrete
100	100	100	100	100
200	200	200	200	200
300	300	300	300	300
400	400	400	400	400

Player A

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Algebraic Calculations for 100.

Determine the infinite limit: $\lim_{x \to 0} \dfrac{x+1}{x^2(x+7)}$

a	0
b	1/7
c	-1/7
d	$-\infty$
e	∞

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Algebraic Calculations for 200.

Find $\lim_{x \to \infty} \dfrac{\sqrt{x^2 - 9}}{2x - 6}$

a -1/2

b 3

c -3

d 0

e limit does not exist

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Algebraic Calculations for 300.

Let $F(x) = \dfrac{x^2 - 1}{|x - 1|}$. Find $\lim_{x \to 1+} F(x)$ and $\lim_{x \to 1-} F(x)$

- a both 2
- b 2 and 1
- c 2 and -2
- d 2 and -1
- e both 1

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Algebraic Calculations for 400.

Evaluate $\lim_{x \to 0} \dfrac{(7+x)^{-1} - 7^{-1}}{x}$

a	-49
b	49
c	7
d	-1/49
e	-1/7

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Mixed Calculations for 100.

Calculate, if possible, the following $\lim_{x \to 0} xe^x$

a	-1
b	e^0
c	e
d	0
e	1

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Mixed Calculations for 200.

Calculate, if possible, the following $\lim_{x \to 2} (x-2) \cdot \cot(x-2)$

a ∞

b $-\infty$

c Does not exist

d None of the above

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Mixed Calculations for 300.

Calculate, if possible, the following $\lim_{x \to 0} x \ln x$

a 1

b ∞

c 0

d $-\infty$

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Mixed Calculations for 400.

Calculate, if possible, the following $\lim_{x \to 1} \dfrac{\ln x}{x - 1}$

a 1

b 0

c Does not exist

d Can't divide by zero

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Properties for 100.

Correctly complete the following property:

$$\lim_{x \to c} [f(x) \pm g(x)] = ?$$

a $\lim_{x \to c} f(x) + \lim_{x \to c} g(x)$

b $\lim_{x \to c} f(x) - \lim_{x \to c} g(x)$

c $\lim_{x \to c} f(x) \pm \lim_{x \to c} g(x)$

d f and g cancels to zero.

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Properties for 200.

Correctly complete the following property:

$$\lim_{x \to c} [f(x) \cdot g(x)] = ?$$

a $\lim_{x \to c} f(x) \div \lim_{x \to c} g(x)$

b $\lim_{x \to c} f(x) \neq \lim_{x \to c} g(x)$

c $\lim_{x \to c} f(x) \cdot \lim_{x \to c} g(x)$

d $\lim_{x \to c} f(x) \pm \lim_{x \to c} g(x)$

e $\lim_{x \to c} f(x) \geq \lim_{x \to c} g(x)$

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Properties for 300.

Correctly complete the following property:

$$\lim_{x\to c} \frac{f(x)}{g(x)} = \frac{\lim_{x\to c} f(x)}{\lim_{x\to c} g(x)}$$

a if $\lim_{x\to c} f(x) \neq 0$.

b if $\lim_{x\to c} f(x)/g(x) \neq 0$.

c if $\lim_{x\to c} g(x)/f(x) \neq 0$.

d if $\lim_{x\to c} g(x) \neq 0$.

e if $\lim_{x\to c} (f(x) - g(x)) \neq 0$.

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Properties for 400.

Correctly complete the following limit property:

$$\lim_{x \to c} \sqrt[n]{f(x)}$$

a $\sqrt[x]{\lim_{x \to c} f(x)}$

b $\sqrt[c]{\lim_{x \to c} f(x)}$

c $\sqrt[n]{\lim_{x \to c} f(x)}$

d $n \cdot \sqrt{\lim_{x \to c} f(x)}$

e $\sqrt{n \lim_{x \to c} f(x)}$

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Piecewise Functions for 100.

If $f(x) = \begin{cases} x^2 & x \leq 1 \\ 3x - 2 & 1 < x < 410 \\ x + 5 & 10 < x \end{cases}$, what is $\lim_{x \to 10} f(x)$?

a 3

b 5

c Does not exist

d 10

e None of the above

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Piecewise Functions for 200.

If $f(x) = \begin{cases} x^2 + 1 & x < 2 \\ -x + 3 & 2 \leq x \end{cases}$, what is $\lim_{x \to 2} f(x)$?

a 1

b 2

c 3

d Does not exist

e None of the above

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Piecewise Functions for 300.

If $f(x) = \begin{cases} (x+4)^2 - 2 & x \leq -2 \\ -x & -2 < x \end{cases}$, what is $\lim_{x \to -2} f(x)$?

a 2

b 0

c -2

d Does not exist

e None of the above

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Piecewise Functions for 400.

If $f(x) = \begin{cases} \dfrac{x^2-6}{x^2+6x} & x \neq 0 \\ -20 & x = 0 \end{cases}$, what is $\lim_{x \to 0} f(x)$?

a 6

b -20

c Does not exist

d None of the above

e 0

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Discrete for 100.

Find the limit of $f(x)$ as x takes values closer to 1, if the following are the sequence of $f(x)$ values as x approaches 1: 3, 3.6, 3.8, 3.9, 3.98, 3.998, 3.9998, 3.9998.

a 3

b 3.6

c 3.9

d 4

e None of the above

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Discrete for 200.

Find the limit of $f(x)$ as x takes values closer to 1, if the following are the sequence of $f(x)$ values as x approaches 5: 5, 4.4, 4.2, 4.1, 4.02, 4.002, 4.0002, 4.00002.

a 5

b 4.5

c 4.00002

d 4

e None of the above

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Discrete for 300.

Find the limit of $f(x)$ as x takes values closer to 1, if the following are the sequence of $f(x)$ values as x approaches 3: 1.9-2, 1.99-2, 1.999-2, 1.9999-2, 1.99999-2.

a 1

b 1.99999

c 2

d 0

e None of the above

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Discrete for 400.

Find the limit of $f(x)$ as x takes values closer to 1, if the following are the sequence of $f(x)$ values as x approaches 1: -10.5, -10.04, -10.003, -10.000 2,-10.00001.

a -1

b -10.00001

c -10

d 10

e None of the above

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