

Calculus Practice: Finding Limits Other Methods 1b

Evaluate each limit.

1) $\lim_{x \rightarrow -1} \frac{x+1}{x^2+3x+2}$

2) $\lim_{x \rightarrow -2} \frac{x+2}{x^2+x-2}$

3) $\lim_{x \rightarrow 2} \frac{x-2}{x^2-3x+2}$

4) $\lim_{x \rightarrow 3} \frac{x-3}{x^2-5x+6}$

5) $\lim_{x \rightarrow 1} \frac{x-1}{x^2+2x-3}$

6) $\lim_{x \rightarrow 1} \frac{x-1}{x^2-3x+2}$

7) $\lim_{x \rightarrow 2} f(x), f(x) = \begin{cases} \frac{x}{2}, & x < 2 \\ -x^2 + 4x - 3, & x \geq 2 \end{cases}$

8) $\lim_{x \rightarrow 3} f(x), f(x) = \begin{cases} -x^2 - 4x - 3, & x < -3 \\ 0, & x \geq -3 \end{cases}$

9) $\lim_{x \rightarrow 2} (|x-2| - 3)$

10) $\lim_{x \rightarrow -2} (2x + |x+2|)$

11) $\lim_{x \rightarrow -2} f(x), f(x) = \begin{cases} -2x - 1, & x < -2 \\ \frac{x}{2} + 4, & x \geq -2 \end{cases}$

12) $\lim_{x \rightarrow 3} (2x + |2x - 6|)$

13) $\lim_{x \rightarrow -1} \frac{x}{\frac{1}{1+x} - 1}$

14) $\lim_{x \rightarrow -3} \frac{x+3}{x^2+5x+6}$

15) $\lim_{x \rightarrow -2} \frac{x^2+5x+6}{x+2}$

16) $\lim_{x \rightarrow -1} \frac{x^2-x-2}{x+1}$

17) $\lim_{x \rightarrow 0} \frac{\frac{1}{-3+x} + \frac{1}{3}}{x}$

18) $\lim_{x \rightarrow -2} f(x), f(x) = \begin{cases} x-2, & x \neq -2 \\ 0, & x = -2 \end{cases}$

19) $\lim_{x \rightarrow -2} \frac{x}{\frac{1}{2+x} - \frac{1}{2}}$

20) $\lim_{x \rightarrow 1} f(x), f(x) = \begin{cases} -2, & x \neq 1 \\ -5, & x = 1 \end{cases}$

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Evaluate each limit.

1) $\lim_{x \rightarrow -1} -\frac{x+1}{x^2+3x+2}$

-1

2) $\lim_{x \rightarrow -2} -\frac{x+2}{x^2+x-2}$

 $\frac{1}{3}$

3) $\lim_{x \rightarrow 2} \frac{x-2}{x^2-3x+2}$

1

4) $\lim_{x \rightarrow 3} \frac{x-3}{x^2-5x+6}$

1

5) $\lim_{x \rightarrow 1} \frac{x-1}{x^2+2x-3}$

 $\frac{1}{4}$

6) $\lim_{x \rightarrow 1} \frac{x-1}{x^2-3x+2}$

-1

7) $\lim_{x \rightarrow 2} f(x), f(x) = \begin{cases} \frac{x}{2}, & x < 2 \\ -x^2 + 4x - 3, & x \geq 2 \end{cases}$

1

8) $\lim_{x \rightarrow -3} f(x), f(x) = \begin{cases} -x^2 - 4x - 3, & x < -3 \\ 0, & x \geq -3 \end{cases}$

0

9) $\lim_{x \rightarrow 2} (|x-2| - 3)$

-3

10) $\lim_{x \rightarrow -2} (2x + |x+2|)$

-4

11) $\lim_{x \rightarrow -2} f(x), f(x) = \begin{cases} -2x - 1, & x < -2 \\ \frac{x}{2} + 4, & x \geq -2 \end{cases}$

3

12) $\lim_{x \rightarrow 3} (2x + |2x-6|)$

6

13) $\lim_{x \rightarrow -1} \frac{x}{\frac{1}{1+x} - 1}$

0

14) $\lim_{x \rightarrow -3} -\frac{x+3}{x^2+5x+6}$

1

15) $\lim_{x \rightarrow -2} \frac{x^2+5x+6}{x+2}$

1

16) $\lim_{x \rightarrow -1} \frac{x^2-x-2}{x+1}$

-3

17) $\lim_{x \rightarrow 0} \frac{\frac{1}{-3+x} + \frac{1}{3}}{x}$

 $-\frac{1}{9}$

18) $\lim_{x \rightarrow -2} f(x), f(x) = \begin{cases} x-2, & x \neq -2 \\ 0, & x = -2 \end{cases}$

-4

19) $\lim_{x \rightarrow -2} \frac{x}{\frac{1}{2+x} - \frac{1}{2}}$

0

20) $\lim_{x \rightarrow 1} f(x), f(x) = \begin{cases} -2, & x \neq 1 \\ -5, & x = 1 \end{cases}$

-2