

Name: _____

Date: _____

Learning Goal 2.1

Finite limits and continuity.

More Questions

1. Determine each limit numerically.

a. $\lim_{x \rightarrow 3} 3x - 2 = 7$

b. $\lim_{x \rightarrow 0} \frac{x}{x - 2} = 0$

c. $\lim_{x \rightarrow 0} \frac{x}{x^2 - 2x} = -0.5$

x	$f(x)$
2.9	6.7
2.99	6.97
2.999	6.997
3	—
3.001	7.003
3.01	7.03
3.1	7.3

x	$f(x)$
-0.1	0.04762
-0.01	0.00498
-0.001	0.0005
0	—
0.001	-0.00050
0.01	-0.00503
0.1	-0.05263

x	$f(x)$
-0.1	-0.47619
-0.01	-0.49751
-0.001	-0.49975
0	—
0.001	-0.50025
0.01	-0.50251
0.1	-0.52632

2. Determine each limit graphically by hand.

a. $\lim_{x \rightarrow 2} \begin{cases} \frac{x^2 + 4x - 12}{x^2 - 2x}, & x \neq 2 \\ 6, & x = 2 \end{cases}$

Solution

$$\lim_{x \rightarrow 2} g(x) = 4$$

d. $\lim_{x \rightarrow \frac{3}{2}} x + 4$

Solution

$$\lim_{x \rightarrow \frac{3}{2}} g(x) = \frac{11}{2}$$

b. $\lim_{x \rightarrow 2} \begin{cases} x^2, & x \geq -1 \\ x + 2, & x < -1 \end{cases}$

Solution

$$\lim_{x \rightarrow 2} g(x) = 4$$

e. $\lim_{x \rightarrow \frac{3}{2}} \frac{2x^2 + 5x - 12}{2x - 3}$

Solution

$$\lim_{x \rightarrow \frac{3}{2}} g(x) = \frac{11}{2}$$

c. $\lim_{x \rightarrow 0} \begin{cases} 1, & x \geq 0 \\ 0, & x < 0 \end{cases}$

Solution

$$\lim_{x \rightarrow 0} g(x) = 1$$

f. $\lim_{x \rightarrow \frac{3}{2}} \begin{cases} \frac{2x^2 + 5x - 12}{2x - 3}, & x \neq \frac{3}{2} \\ 2, & x = \frac{3}{2} \end{cases}$

Solution

$$\lim_{x \rightarrow \frac{3}{2}} g(x) = \frac{11}{2}$$