

Complete the table and use the table to find the limit.

$$1. \lim_{x \rightarrow 5} \frac{x-5}{x^2-25} =$$

x	4.9	4.99	4.999	5	5.001	5.01	5.1
y				Und.			

$$2. \lim_{x \rightarrow -3} \frac{\sqrt{1-x}-2}{x+3} =$$

x	-3.1	-3.01	-3.001	-3	-2.999	-2.99	-2.9
y				Und.			

3. If $\lim_{x \rightarrow 2} f(x) = 5$ and $\lim_{x \rightarrow 2} g(x) = -3$, evaluate the following limits:

$$a) \lim_{x \rightarrow 2} f(x) + g(x)$$

$$b) \lim_{x \rightarrow 2} f(x) - g(x)$$

$$c) \lim_{x \rightarrow 2} f(x) \cdot g(x)$$

$$d) \lim_{x \rightarrow 2} g(x) - 2f(x) + 3$$

$$e) \lim_{x \rightarrow 2} [f(x)]^2$$

4. When does a limit fail to exist? Draw a picture of each situation.

Evaluate each limit analytically.

$$5. \lim_{x \rightarrow -1} x^6 - 12x + 1$$

$$6. \lim_{x \rightarrow 2} \sin\left(\frac{\pi x}{3}\right)$$

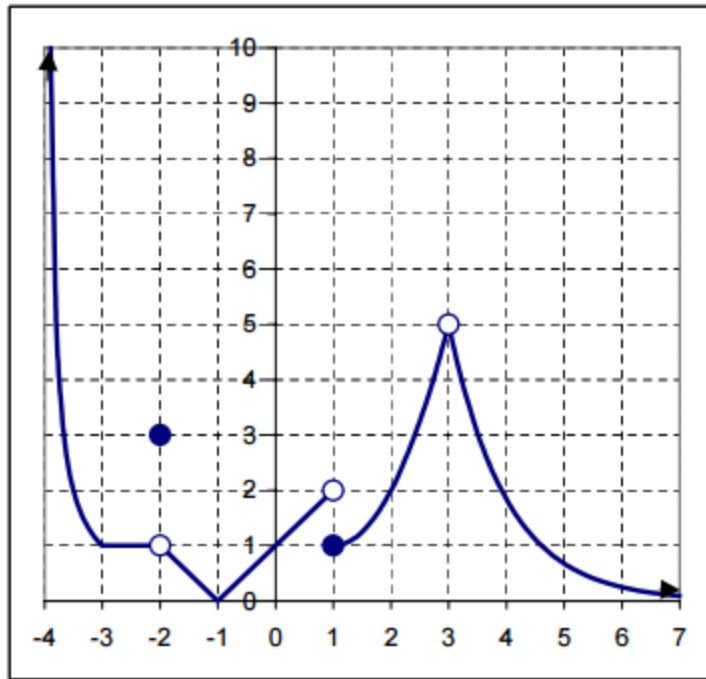
$$7. \lim_{x \rightarrow 7} \frac{5x}{\sqrt{x+2}}$$

For 8-10, use $f(x) = \begin{cases} 2x^2 & x > 3 \\ x-3 & x \leq 3 \end{cases}$

$$8. \lim_{x \rightarrow 3^+} f(x)$$

$$9. \lim_{x \rightarrow 3^-} f(x)$$

$$10. \lim_{x \rightarrow 3} f(x)$$



11. Use the graph above to find each of the following.

1) $f(-2) = \underline{\hspace{2cm}}$

2) $\lim_{x \rightarrow -2^+} f(x) = \underline{\hspace{2cm}}$

3) $\lim_{x \rightarrow -2} f(x) = \underline{\hspace{2cm}}$

4) $\lim_{x \rightarrow -1^+} f(x) = \underline{\hspace{2cm}}$

5) $\lim_{x \rightarrow -1^-} f(x) = \underline{\hspace{2cm}}$

6) $\lim_{x \rightarrow -1} f(x) = \underline{\hspace{2cm}}$

7) $\lim_{x \rightarrow 1^+} f(x) = \underline{\hspace{2cm}}$

8) $\lim_{x \rightarrow 1^-} f(x) = \underline{\hspace{2cm}}$

9) $\lim_{x \rightarrow 1} f(x) = \underline{\hspace{2cm}}$

10) $f(3) = \underline{\hspace{2cm}}$

11) $\lim_{x \rightarrow 3^+} f(x) = \underline{\hspace{2cm}}$

12) $\lim_{x \rightarrow 3^-} f(x) = \underline{\hspace{2cm}}$

13) $\lim_{x \rightarrow 3} f(x) = \underline{\hspace{2cm}}$

14) $\lim_{x \rightarrow -4^+} f(x) = \underline{\hspace{2cm}}$

15) $\lim_{x \rightarrow \infty} f(x) = \underline{\hspace{2cm}}$

16) $f(1) = \underline{\hspace{2cm}}$

17) $\lim_{x \rightarrow -3} f(x) = \underline{\hspace{2cm}}$

18) $f(-4) = \underline{\hspace{2cm}}$