

In numbers 1 & 2, use each table to find the indicated limit.

1.  $\lim_{x \rightarrow 2} 2x^2$

(8)

| x    | 1.99   | 1.999  | 1.9999 $\rightarrow \leftarrow$ 2.0001 | 2.001  | 2.01   |
|------|--------|--------|----------------------------------------|--------|--------|
| f(x) | 7.0202 | 7.9920 | 7.9992 $\rightarrow \leftarrow$ 8.0008 | 8.0080 | 8.0802 |

2.  $\lim_{x \rightarrow 0} \frac{\sin 3x}{x}$

(3)

| x    | -0.03  | -0.02  | -0.01 $\rightarrow \leftarrow$ 0.01    | 0.02   | 0.03   |
|------|--------|--------|----------------------------------------|--------|--------|
| f(x) | 2.9960 | 2.9982 | 2.9996 $\rightarrow \leftarrow$ 2.9996 | 2.9982 | 2.9960 |

For numbers 3 – 8, construct a table to find the indicated limit.

3.  $\lim_{x \rightarrow 2} 5x^2$

| x     | y      |
|-------|--------|
| 1.99  | 19.801 |
| 1.999 | 19.98  |
| 2.001 | 20.02  |
| 2.01  | 20.201 |

(20)

4.  $\lim_{x \rightarrow 3} \frac{1}{x-2}$

| x     | y      |
|-------|--------|
| 2.99  | 1.0101 |
| 2.999 | 1.001  |
| 3.001 | .999   |
| 3.01  | .9901  |

(1)

5.  $\lim_{x \rightarrow 0} \frac{x}{x^2 + 1}$

| x     | y    |
|-------|------|
| -0.03 | -.03 |
| -0.02 | -.02 |
| -0.01 | -.01 |
| 0.01  | .01  |
| 0.02  | .02  |
| 0.03  | .03  |

(0)

6.  $\lim_{x \rightarrow -2} \frac{x^3 + 8}{x^2 + 2}$

| x      | y     |
|--------|-------|
| -2.001 | -.002 |
| -2.01  | -.02  |
| -1.999 | .002  |
| -1.99  | .02   |

(0)

7.  $\lim_{x \rightarrow 0} \frac{2x^2 + x}{\sin x}$

| x     | y      |
|-------|--------|
| -0.03 | .9401  |
| -0.02 | .9601  |
| -0.01 | .98    |
| 0.01  | 1.02   |
| 0.02  | 1.0401 |
| 0.03  | 1.0602 |

(1)

8.  $\lim_{x \rightarrow 0} \frac{\tan x}{x}$

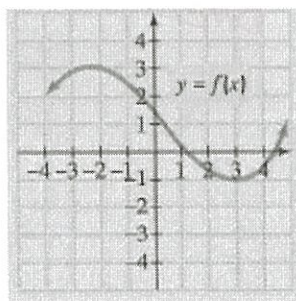
| x     | y      |
|-------|--------|
| -0.03 | 1.0003 |
| -0.02 | 1.0001 |
| -0.01 | 1      |
| 0.01  | 1      |
| 0.02  | 1.0001 |
| 0.03  | 1.0003 |

(1)

For numbers 9 & 10, use the graph of  $f$  to find the indicated limit.

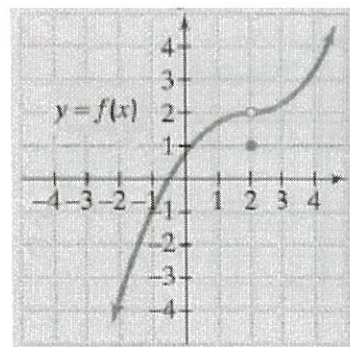
9.  $\lim_{x \rightarrow 3} f(x)$

(-1)



10.  $\lim_{x \rightarrow 2} f(x)$

(2)



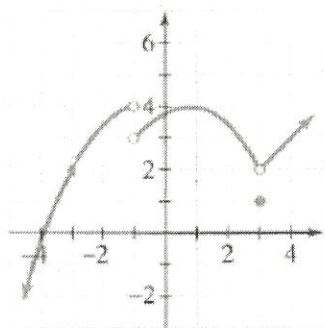
11.  $\lim_{x \rightarrow 0} f(x)$ , where  $f(x) = \begin{cases} x+1 & \text{if } x < 0 \\ 2x+1 & \text{if } x \geq 0 \end{cases}$

(1)

12.  $\lim_{x \rightarrow 3} f(x)$ , where  $f(x) = \begin{cases} 3x & \text{if } x \geq 3 \\ x^2 & \text{if } x < 3 \end{cases}$

(9)

13. The graph of a function is given. Use the graph to find the indicated limit, or state that the limit does not exist.



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

2

b)  $\lim_{x \rightarrow -3^+} f(x)$

2

c)  $\lim_{x \rightarrow -3} f(x)$

2

e)  $\lim_{x \rightarrow -1^-} f(x)$

4

f)  $\lim_{x \rightarrow -1^+} f(x)$

3

g)  $\lim_{x \rightarrow -1} f(x)$

DNE

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

2

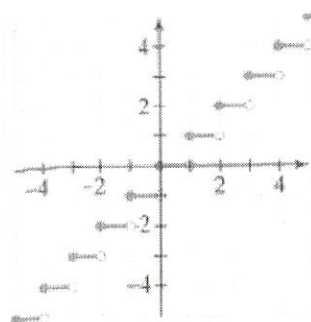
j)  $\lim_{x \rightarrow 3^+} f(x)$

2

k)  $\lim_{x \rightarrow 3} f(x)$

2

14. The graph of a function is given. Use the graph to find the indicated limit, or state that the limit does not exist.



a)  $\lim_{x \rightarrow 2^-} f(x)$

1

b)  $\lim_{x \rightarrow 2^+} f(x)$

2

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

DNE

e)  $\lim_{x \rightarrow 2.5^-} f(x)$

2

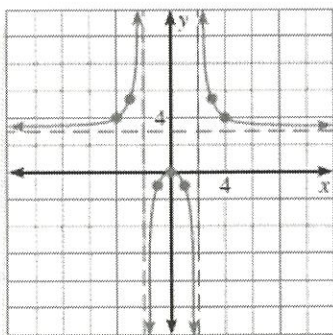
f)  $\lim_{x \rightarrow 2.5^+} f(x)$

2

g)  $\lim_{x \rightarrow 2.5} f(x)$

2

15. The graph of a rational function is given. Use the graph to find the indicated limit, or state that the limit does not exist.



a)  $\lim_{x \rightarrow 2^-} f(x)$

$-\infty$

b)  $\lim_{x \rightarrow 2^+} f(x)$

$\infty$

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

DNE

e)  $\lim_{x \rightarrow \infty} f(x)$

3

f)  $\lim_{x \rightarrow -\infty} f(x)$

3