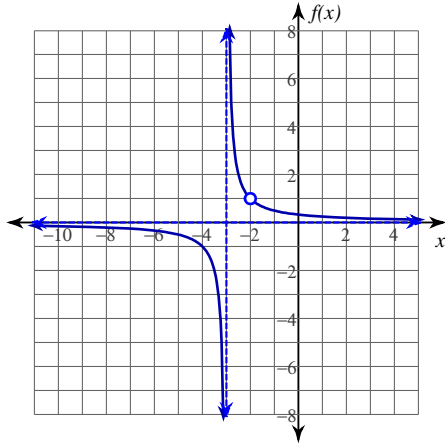


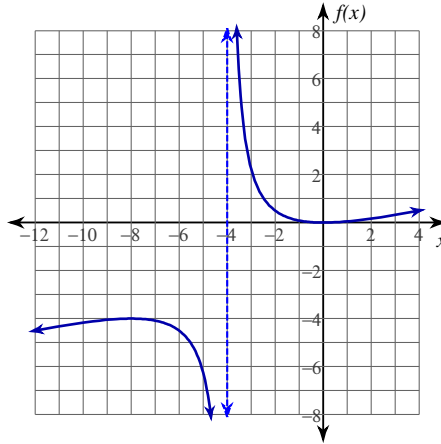
# Evaluating Limits

Evaluate each limit.

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

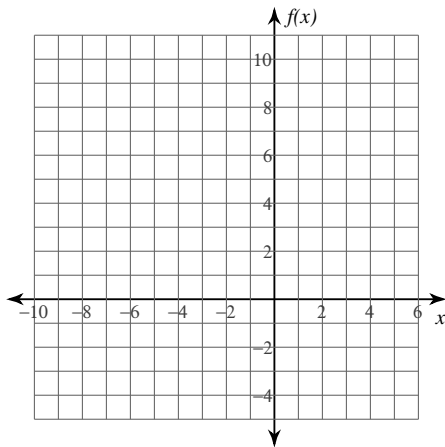


2)  $\lim_{x \rightarrow -4} \frac{x^2}{4x+16}$

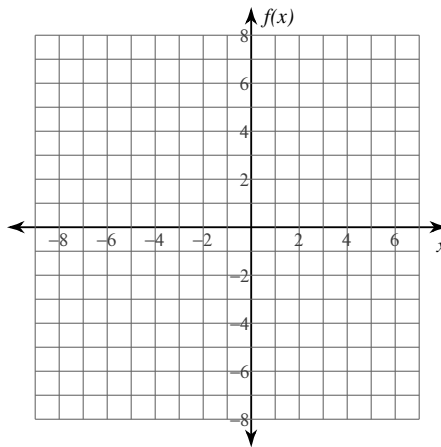


Evaluate each limit. You may use the provided graph to sketch the function.

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



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



**Evaluate each limit.**

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

$$6) \lim_{x \rightarrow -2^+} \frac{1}{x^2 - 4}$$

$$7) \lim_{x \rightarrow 3^-} -\frac{4x}{x-3}$$

$$8) \lim_{x \rightarrow 1} -\frac{3}{x-1}$$

$$9) \lim_{x \rightarrow -2^-} \frac{x+2}{x^2 + x - 2}$$

$$10) \lim_{x \rightarrow -3^-} -\frac{2}{x+3}$$

$$11) \lim_{x \rightarrow \frac{\pi}{4}^-} 2\sec(2x)$$

$$12) \lim_{x \rightarrow \frac{3\pi}{4}^+} 2\tan(2x)$$

**Critical thinking questions:**

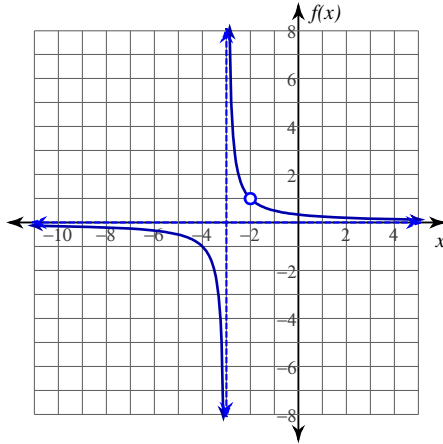
13) Give an example of a right-sided limit that goes to  $\infty$  as  $x$  goes to 5.

14) Give an example of a left-sided limit that goes to  $\infty$  as  $x$  goes to 5.

# Evaluating Limits

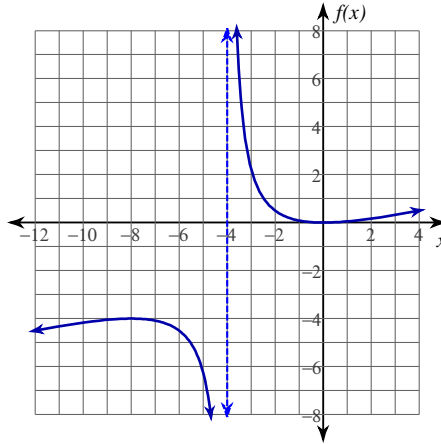
Evaluate each limit.

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



$\infty$

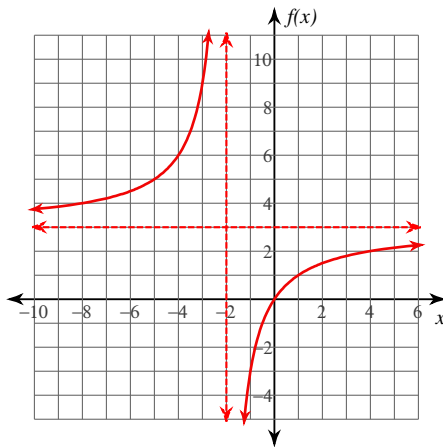
2)  $\lim_{x \rightarrow -4} \frac{x^2}{4x+16}$



Does not exist.

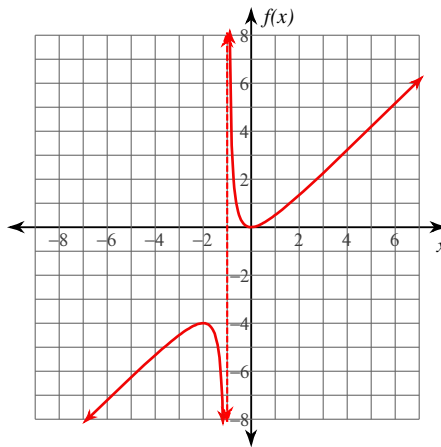
Evaluate each limit. You may use the provided graph to sketch the function.

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



$-\infty$

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



$\infty$

**Evaluate each limit.**

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

$\infty$

$$6) \lim_{x \rightarrow -2^+} \frac{1}{x^2 - 4}$$

$-\infty$

$$7) \lim_{x \rightarrow 3^-} -\frac{4x}{x-3}$$

$\infty$

$$8) \lim_{x \rightarrow 1} -\frac{3}{x-1}$$

**Does not exist.**

$$9) \lim_{x \rightarrow -2^-} \frac{x+2}{x^2+x-2}$$

$-\frac{1}{3}$  (distractor case, limit exists)

$$10) \lim_{x \rightarrow -3^-} -\frac{2}{x+3}$$

$\infty$

$$11) \lim_{x \rightarrow \frac{\pi}{4}^-} 2\sec(2x)$$

$\infty$

$$12) \lim_{x \rightarrow \frac{3\pi}{4}^+} 2\tan(2x)$$

$-\infty$

**Critical thinking questions:**

13) Give an example of a right-sided limit that goes to  $\infty$  as  $x$  goes to 5.

Many answers. Ex:  $\lim_{x \rightarrow 5^+} \frac{1}{x-5}$

14) Give an example of a left-sided limit that goes to  $\infty$  as  $x$  goes to 5.

Many answers. Ex:  $\lim_{x \rightarrow 5^-} -\frac{1}{x-5}$