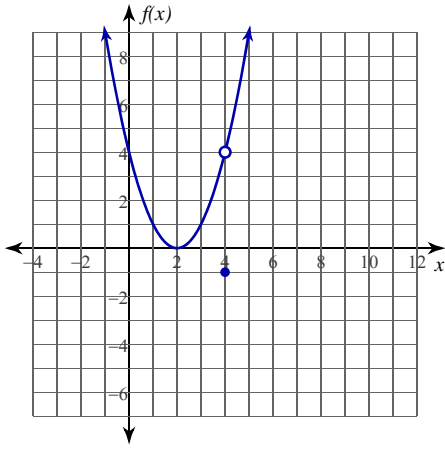


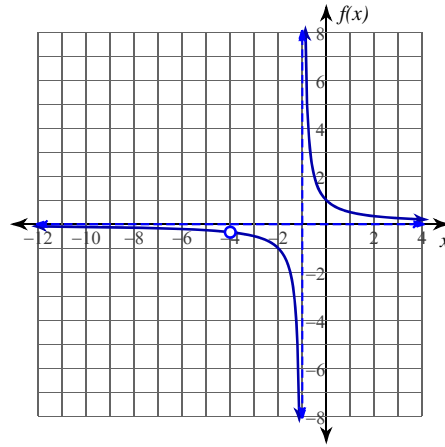
Evaluating Limits

Evaluate each limit.

$$1) \lim_{x \rightarrow 4} f(x), f(x) = \begin{cases} x^2 - 4x + 4, & x \neq 4 \\ -1, & x = 4 \end{cases}$$



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



$$3) \lim_{x \rightarrow -1} f(x), f(x) = \begin{cases} -1, & x \neq -1 \\ 0, & x = -1 \end{cases}$$

$$4) \lim_{x \rightarrow 5} f(x), f(x) = \begin{cases} -x^2 + 10x - 22, & x \neq 5 \\ 2, & x = 5 \end{cases}$$

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

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

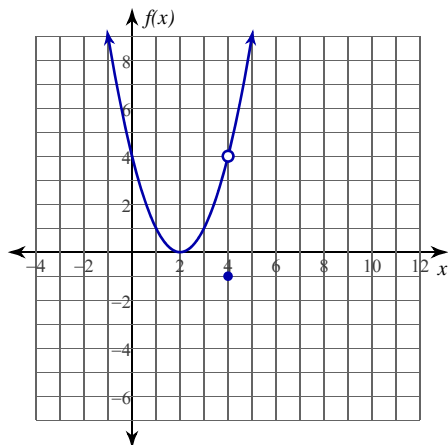
Critical thinking question:

- 7) Give an example of a limit of a rational function where the limit at 3 exists, but the function is undefined at 3.

Evaluating Limits

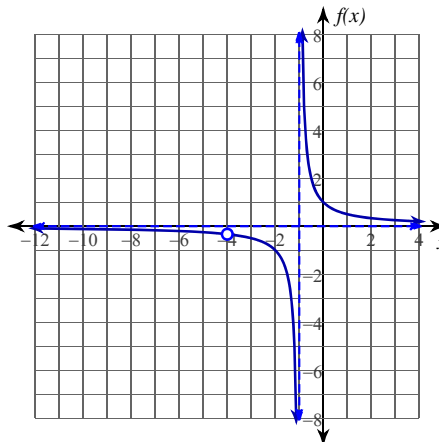
Evaluate each limit.

$$1) \lim_{x \rightarrow 4} f(x), f(x) = \begin{cases} x^2 - 4x + 4, & x \neq 4 \\ -1, & x = 4 \end{cases}$$



4

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

 $-\frac{1}{3}$

$$3) \lim_{x \rightarrow -1} f(x), f(x) = \begin{cases} -1, & x \neq -1 \\ 0, & x = -1 \end{cases}$$

-1

$$4) \lim_{x \rightarrow 5} f(x), f(x) = \begin{cases} -x^2 + 10x - 22, & x \neq 5 \\ 2, & x = 5 \end{cases}$$

3

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

4

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

-1

Critical thinking question:

- 7) Give an example of a limit of a rational function where the limit at 3 exists, but the function is undefined at 3.

Many answers. Ex: $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3}$