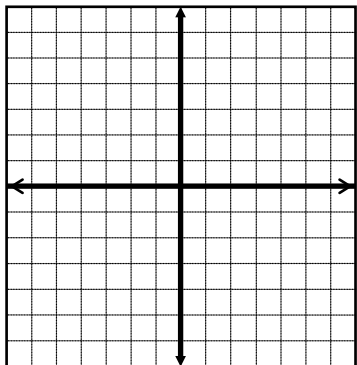


Notes 4 (2.7) Finding Infinite Limits

Graph the rational function, identify the horizontal asymptote, and find the infinite limit.

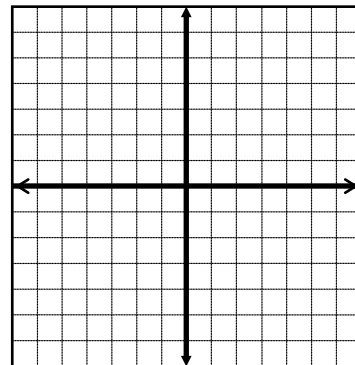
1) $f(x) = \frac{3x^2 - x}{x^2 - x - 6}$



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

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

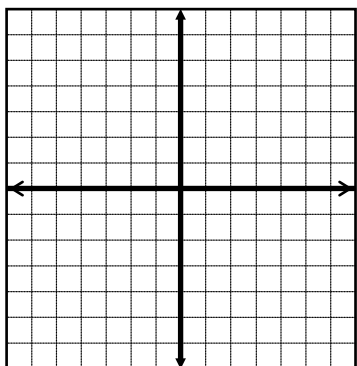
2) $f(x) = \frac{x^2 + 2x - 8}{x^2 - 4}$



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

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

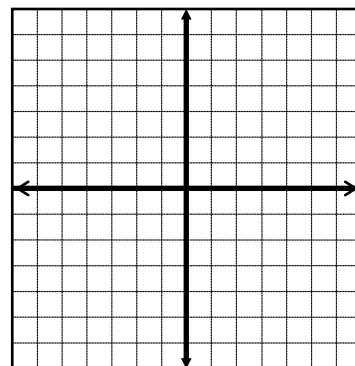
3) $f(x) = \frac{x^2 - 2x - 3}{x + 2}$



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

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

4) $f(x) = \frac{x + 1}{2x^2 - 8}$



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

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

What similarities do you notice about the infinite limits? What conclusions can you make?

Find the infinite limit using horizontal asymptotes.

$$5) \lim_{x \rightarrow \infty} \sqrt{\frac{9x^2 - 2}{x^2 + 3x - 1}}$$

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

$$7) \lim_{x \rightarrow \infty} \frac{2x^2 - 5x}{4x + 1}$$

$$8) \lim_{x \rightarrow \infty} \frac{x + 4}{2x^2 - 3x + 1}$$

Find the other types of infinite limits.

$$9) \lim_{x \rightarrow -\infty} (x^2 - x^5)$$

$$10) \lim_{x \rightarrow \infty} \frac{4x^3 - 2x + 1}{x + 3}$$