

2022-2023

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

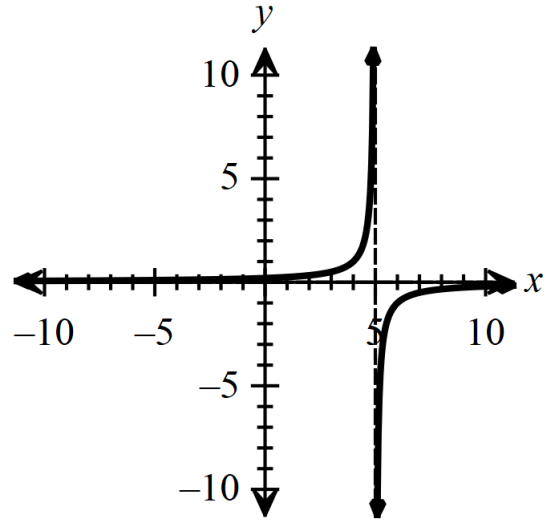
Evaluate the limit and end behavior based on the graph of  $f(x)$  shown.

1.  $\lim_{x \rightarrow 5^+} f(x) =$

$\lim_{x \rightarrow 5^-} f(x) =$

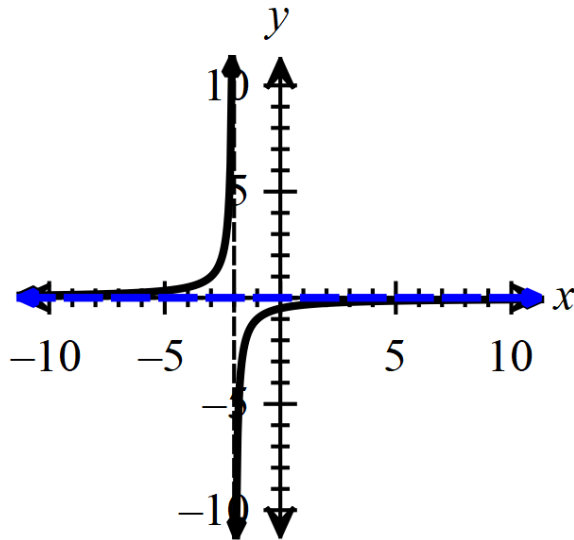
$\lim_{x \rightarrow \infty} f(x) =$

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



Given the graphs of the function below, determine the key features.

2.



Domain:

Positive:

Range:

Negative:

$x$ -intercept(s):

Maximums / minimums:

$y$ -intercept:

Symmetry:

Increasing:

End Behavior/Limits:

Decreasing:

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

Constant:

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

Vertical Asymptote(s):

Horizontal Asymptote:

**Find the vertical asymptotes (remember it is the same as the restrictions, set the denominator = 0 and solve for  $x$ ).**

3.  $f(x) = \frac{1}{x+4}$

4.  $f(x) = \frac{1}{x-2}$

Vertical Asymptote: \_\_\_\_\_

Vertical Asymptote: \_\_\_\_\_

**Find the domain and write it in interval notation (remember it is the same as the vertical asymptote, set the denominator  $\neq 0$  and solve for  $x$ ).**

5.  $f(x) = \frac{1}{x+4}$

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

Domain: \_\_\_\_\_

Domain: \_\_\_\_\_

**Find the horizontal asymptotes and the  $x$ -intercept.**

7.  $f(x) = \frac{1}{x+4}$

8.  $f(x) = \frac{1}{x-2}$

Horizontal Asymptote: \_\_\_\_\_

Horizontal Asymptote: \_\_\_\_\_

$x$ -intercept: \_\_\_\_\_

$x$ -intercept: \_\_\_\_\_

**Find the  $y$ -intercepts (make  $x = 0$  and solve).**

9.  $f(x) = \frac{1}{x+4}$

10.  $f(x) = \frac{1}{x-2}$

$y$ -intercept: \_\_\_\_\_

$y$ -intercept: \_\_\_\_\_

Use the following information to graph the rational equations without technology and determine the domain.

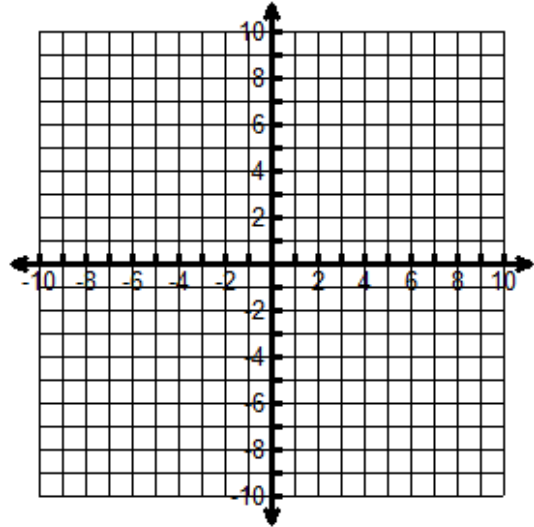
11.  $f(x) = \frac{1}{x-6}$

vertical asymptote:  $x = 6$

horizontal asymptote:  $y = 0$

x-intercept: NONE

y-intercept:  $(0, -\frac{1}{6})$



Domain: \_\_\_\_\_

**Graph each rational function without technology. You found all of the information in #3-10. Just copy it, don't find it again!**

12.  $f(x) = \frac{1}{x+4}$

Vertical Asymptote: \_\_\_\_\_

Domain: \_\_\_\_\_

Horizontal Asymptote: \_\_\_\_\_

x-intercept: \_\_\_\_\_

y-intercept: \_\_\_\_\_

13.  $f(x) = \frac{1}{x-2}$

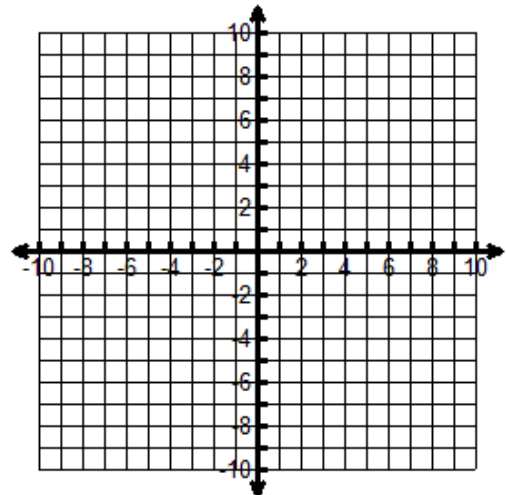
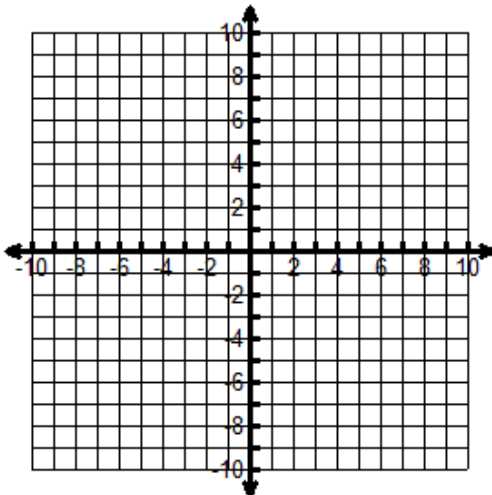
Vertical Asymptote: \_\_\_\_\_

Domain: \_\_\_\_\_

Horizontal Asymptote: \_\_\_\_\_

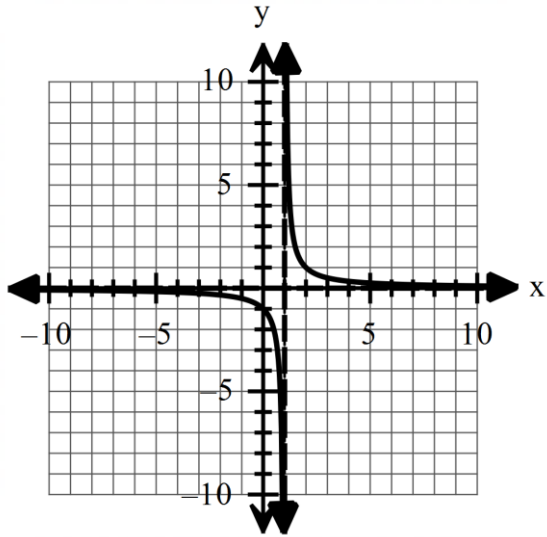
x-intercept: \_\_\_\_\_

y-intercept: \_\_\_\_\_



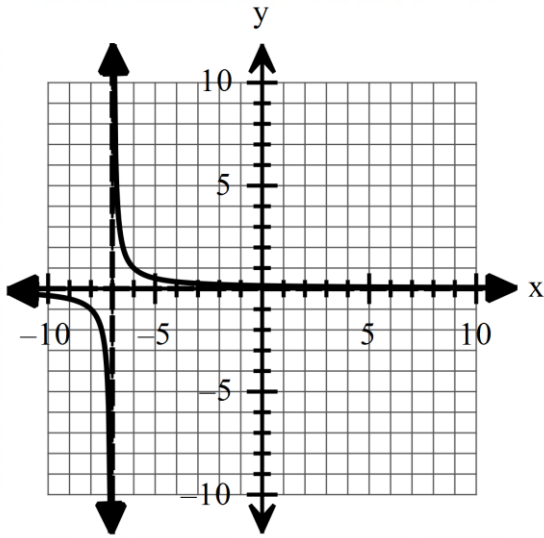
Given the following graph, write an equation for the function.

14.



Equation: \_\_\_\_\_

15.



Equation: \_\_\_\_\_