6.2 Finding Parts of Rational Graphs from Equations

SCORE: /

2023-2024

Name _____ Date _____ Period _____

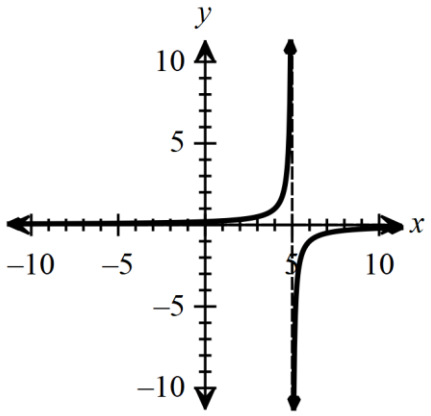
Evaluate the limit and end behavior based on the graph of $f(x)$ shown.

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

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

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

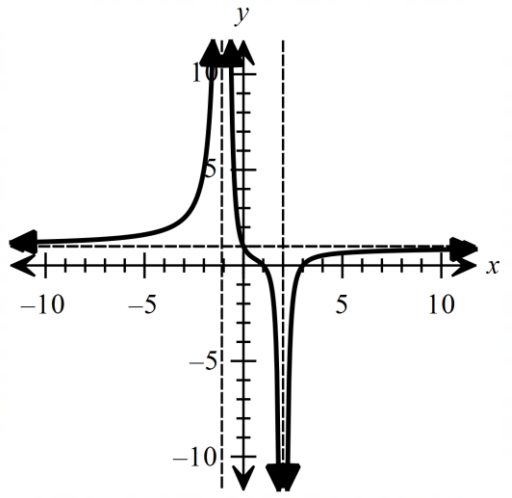
   $\lim_{x\to -\infty} f(x) =$



2. $\lim_{x\to -1^+} f(x) =$ $\lim_{x\to -1^-} f(x) =$

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

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



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

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

Vertical Asymptote(s): _____

Show Work:

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

Vertical Asymptote(s): _____

Show Work:

5. $f(x) = \frac{x+1}{(2x-1)(x+3)}$

Vertical Asymptote(s): _____

Show Work:

Find the restrictions. Use the restrictions to find the domain. Write the domain in interval notation (remember the vertical asymptote(s) are the same as the restrictions).

6. $f(x) = \frac{1}{x-5}$

Restriction: _____

Domain: _____

Show Work:

7. $f(x) = \frac{x}{3x+2}$

Restriction: _____

Domain: _____

Show Work:

8. $f(x) = \frac{x+2}{(x-1)(4x+3)}$

Restriction: _____

Domain: _____

Show Work:

Find the horizontal asymptotes and the x-intercept.

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

Horizontal Asymptote: _____

x-intercept(s): _____

Show Work:

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

Horizontal Asymptote: _____

x-intercept(s): _____

Show Work:

11. $f(x) = \frac{x-4}{(2x-5)(x-7)}$

Horizontal Asymptote: _____

x-intercept(s): _____

Show Work:

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

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

y-intercept: _____

Show Work:

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

y-intercept: _____

Show Work:

14. $f(x) = \frac{x+1}{(2x-1)(x+3)}$

y-intercept: _____

Show Work:

Find the parts of a rational function asked for below.

15. $f(x) = \frac{2x-3}{x^2+8x+15}$ Factored form:

Vertical Asymptote(s): _____

x-intercept(s): _____

Horizontal Asymptote: _____

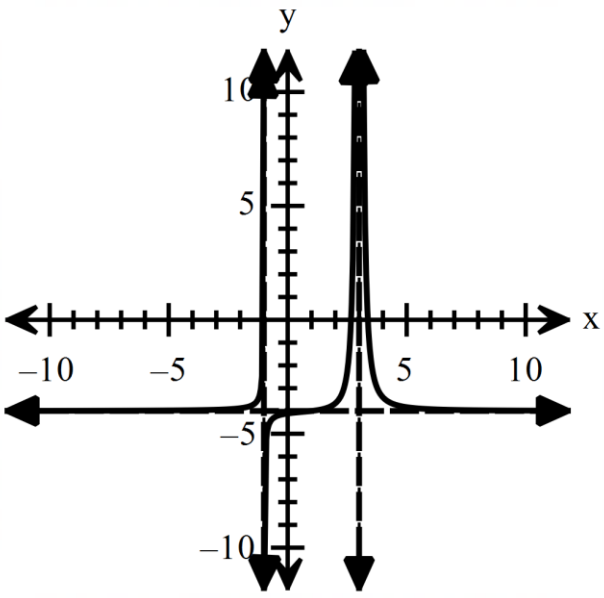
y-intercept(s): _____

Domain: _____

Work:

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

16.



y-intercept: $(0, -4.11)$ *x*-intercept(s): $(-1.03,\ 0)$, $(2.66, 0), (3.37, 0)$

Domain: Range:

Positive:

Negative:

Increasing:

Decreasing:

Maximums / minimums:

End Behavior/Limits:

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

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

$\lim_{x \to 3^-} f(x) =$ $\lim_{x \to 3^+} f(x) =$

Vertical Asymptote(s): Horizontal Asymptote: