

### 5.2 HW: Graphing Rational Functions

Identify the requested information. Then sketch a graph.

1.  $f(x) = \frac{x^2 - 4}{2x^2 + 10x + 12}$

Domain:  $(-\infty, -3) \cup (-3, -2) \cup (-2, \infty)$

Vertical Asymptotes:

$x = -3$

Holes:

$(-2, -2)$

Horizontal Asymptotes:

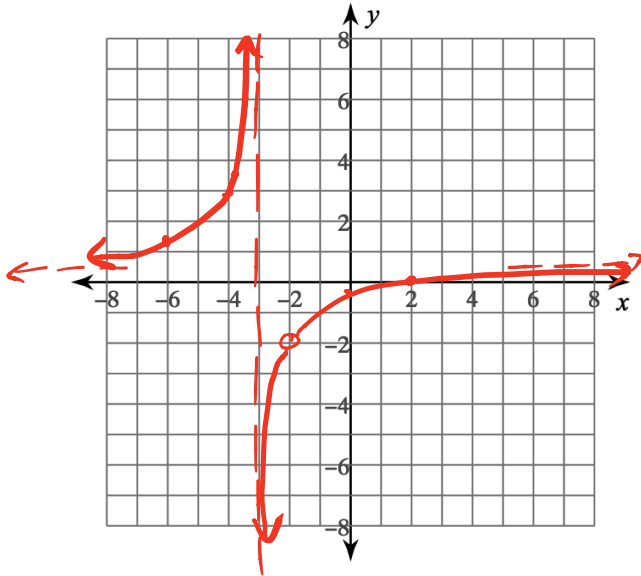
$y = \frac{1}{2}$

x-intercept(s):

$(2, 0)$

y-intercept:

$(0, -\frac{1}{3})$



2.  $f(x) = \frac{3x + 6}{x + 3}$

Domain:  $(-\infty, -3) \cup (-3, \infty)$

Vertical Asymptotes:

$x = -3$

Holes:

None

Horizontal Asymptotes:

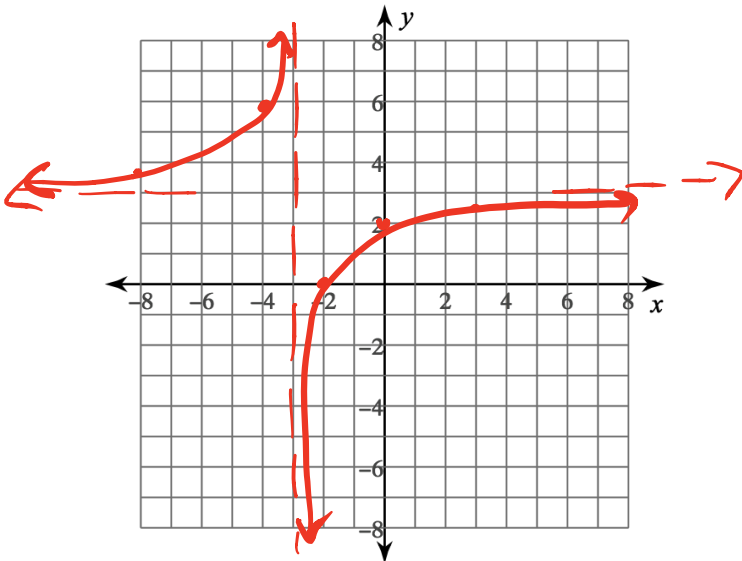
$y = 3$

x-intercept(s):

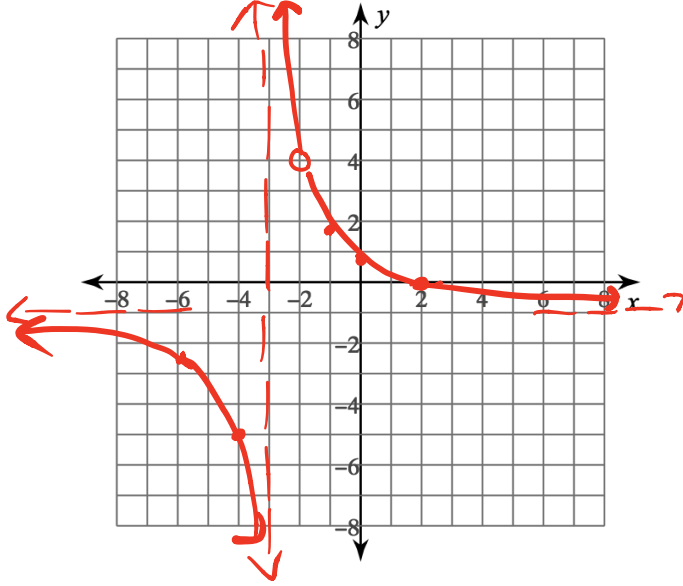
$(-2, 0)$

y-intercept:

$(0, 2)$



3.  $f(x) = \frac{-x^2+4}{x^2+5x+6}$



Domain:

$$(-\infty, -3) \cup (-3, -2) \cup (-2, \infty)$$

Vertical Asymptotes:

$$x = -3$$

Holes:

$$(-2, 4)$$

Horizontal Asymptotes:

$$y = -1$$

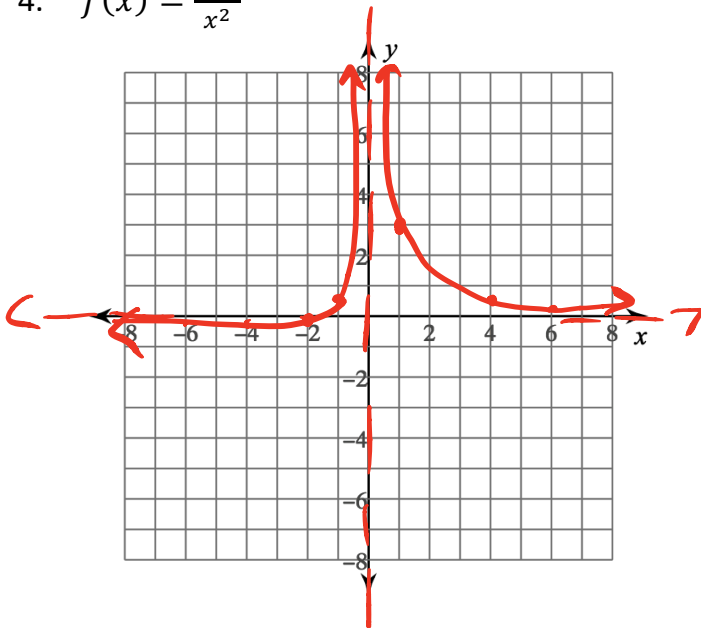
x-intercept(s):

$$(2, 0)$$

y-intercept:

$$(0, 2/3)$$

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



Domain:

$$(-\infty, 0) \cup (0, \infty)$$

Vertical Asymptotes:

$$x = 0$$

Holes:

None

Horizontal Asymptotes:

$$y = 0$$

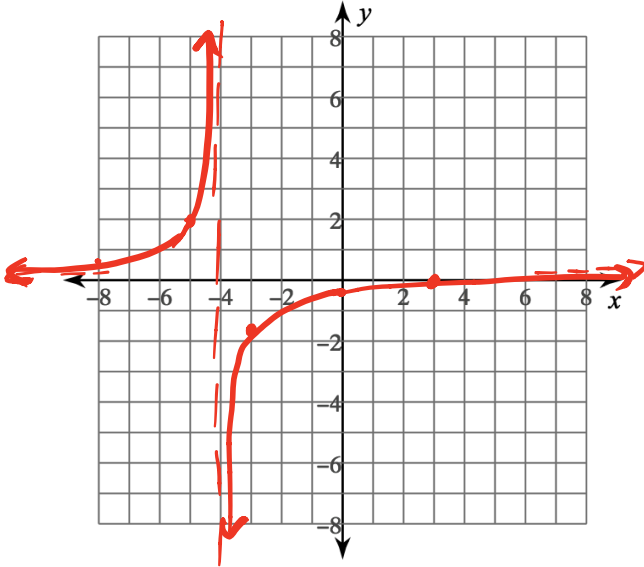
x-intercept(s):

$$(-2, 0)$$

y-intercept:

None

5.  $f(x) = \frac{x-3}{4x+16}$



Domain:

$$(-\infty, -4) \cup (-4, \infty)$$

Vertical Asymptotes:

$$x = -4$$

Holes:

None

Horizontal Asymptotes:

$$y = 1/4$$

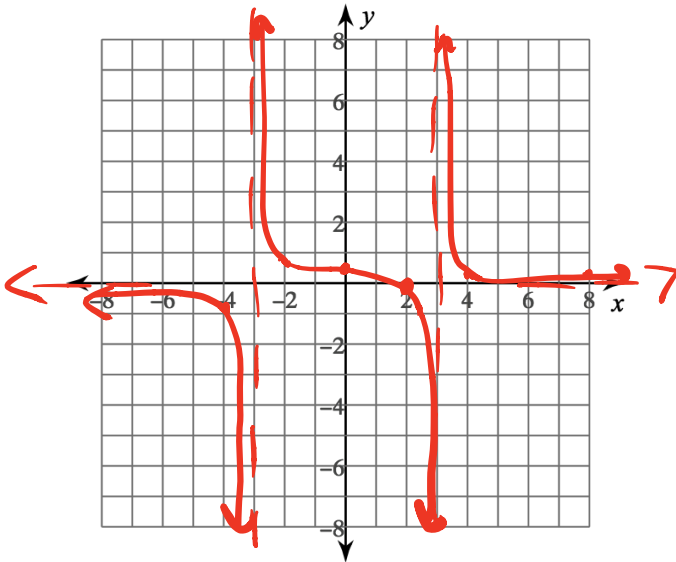
x-intercept(s):

$$(3, 0)$$

y-intercept:

$$(0, -3/16)$$

6.  $f(x) = \frac{x-2}{x^2-9}$



Domain:

$$(-\infty, -3) \cup (-3, 3) \cup (3, \infty)$$

Vertical Asymptotes:

$$x = 3, x = -3$$

Holes:

None

Horizontal Asymptotes:

$$y = 0$$

x-intercept(s):

$$(2, 0)$$

y-intercept:

$$(0, 2/9)$$