10.1 Graph Rational Functions

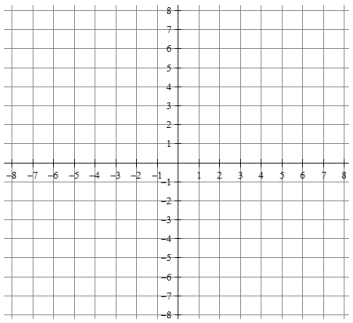
Corrective Assignment

NAME:_____

DATE:_____

Graph the following and write the equations of the horizontal asymptote and vertical asymptote.

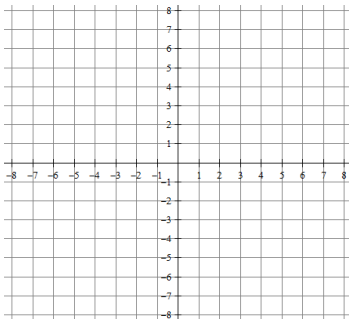
1. $y = \frac{1}{x+5} + 2$



VA:

HA:

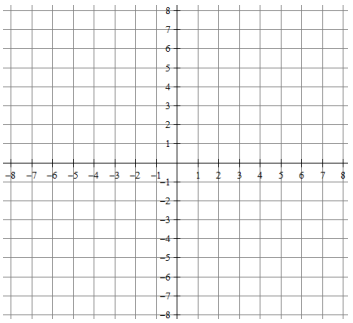
2. $f(x) = \frac{1}{x-3} - 4$



VA:

HA:

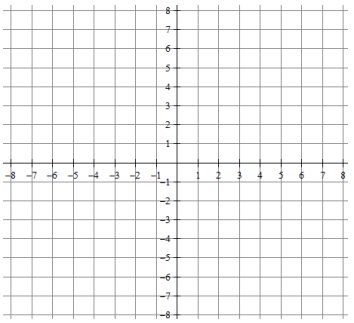
3. $f(x) = \frac{1}{x} + 1$



VA:

HA:

4. $y = -\frac{1}{x+2}$

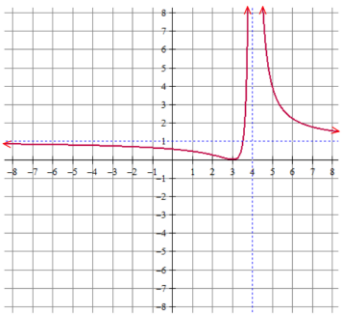


VA:

HA:

Given the graph of a rational function, find the asymptotes and intercepts if they exist.

5.



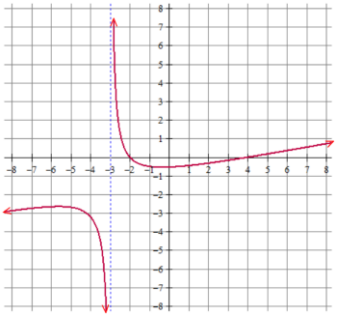
HA:

VA:

x-int:

y-int:

6.



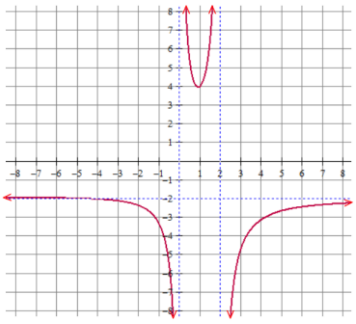
HA:

VA:

x-int:

y-int:

7.



HA:

VA:

x-int:

y-int:

Find the horizontal asymptote, vertical asymptote(s), *x*-intercept(s), and *y*-intercept if they exist.

8.

$$f(x) = \frac{2x^2 - 32}{x^2 + 13x + 40}$$

VA:

HA:

x-intercept(s):

y-intercept:

9.

$$f(x) = \frac{2x - 5}{x^2 - 7x}$$

VA:

HA:

x-intercept(s):

y-intercept:

10.

$$f(x) = \frac{x^2 - 5x - 84}{x + 4}$$

VA:

HA:

x-intercept(s):

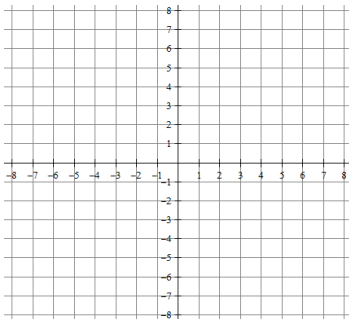
y-intercept:

Find all asymptotes and intercepts. Mark them on the graph. Use the graphing calculator to sketch the function.

11. $f(x) = \dfrac{x-4}{x^2-3x}$

VA:

HA:



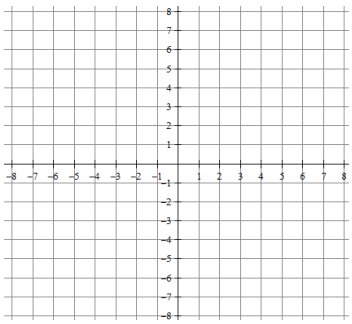
x-int:

y-int:

12. $f(x) = \dfrac{x^2-9x+20}{x^2-4x+3}$

VA:

HA:



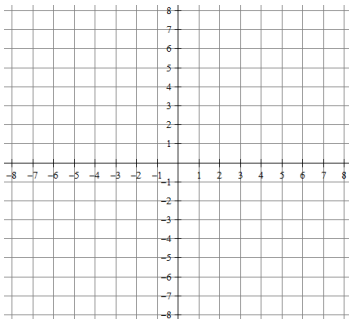
x-int:

y-int:

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

VA:

HA:



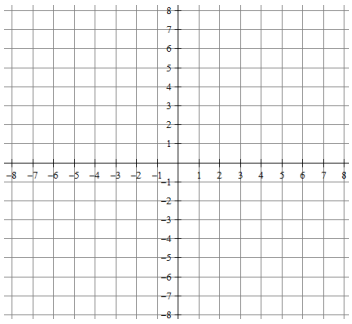
x-int:

y-int:

14. $f(x) = \dfrac{x^2-9}{4x^2-16}$

VA:

HA:

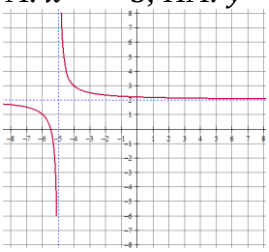


x-int:

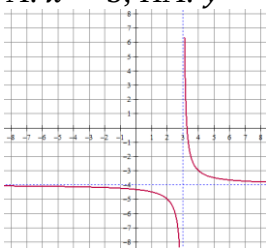
y-int:

ANSWERS TO 10.1 CORRECTIVE ASSIGNMENT

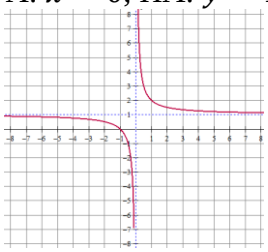
1. VA: $x = -5$, HA: $y = 2$



2. VA: $x = 3$, HA: $y = -4$



3. VA: $x = 0$, HA: $y = 1$



4. VA: $x = -2$, HA: $y = 0$

5. VA: $x = 4$, HA: $y = 1$; *x*-int: $(3,0)$; *y*-int: $\left(0, \frac{1}{2}\right)$

6. VA: $x = -3$, HA: none; *x*-int: $(-2,0), (4,0)$; *y*-int: $\left(0, -\frac{1}{2}\right)$

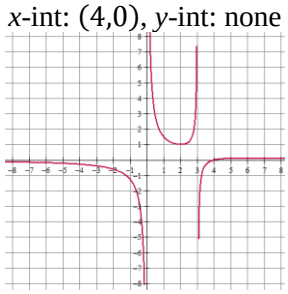
7. VA: $x = 0, x = 2$, HA: $y = -2$; *x*-int: none; *y*-int: none

8. VA: $x = -8$, $x = -5$, HA: $y = 2$; *x*-int: $(-4,0)$, $(4,0)$; *y*-int: $\left(0, -\frac{4}{5}\right)$

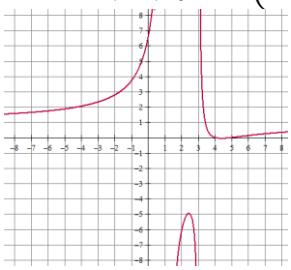
9. VA: $x = 0$, $x = 7$, HA: $y = 0$; *x*-int: $\left(\frac{5}{2}, 0\right)$; *y*-int: none

10. VA: $x = -4$, HA: none; *x*-int: $(-7,0)$, $(12,0)$; *y*-int: $(0,-21)$

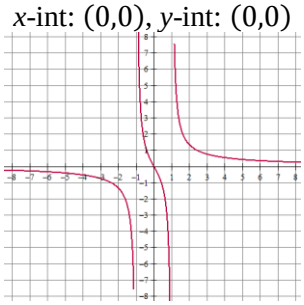
11. VA: $x = 0,3$, HA: $y = 0$; *x*-int: $(4,0)$, *y*-int: none



12. VA: $x = 1,3$, HA: $y = 1$; *x*-int: $(4,0), (5,0)$, *y*-int: $\left(0, \frac{20}{3}\right)$



13. VA: $x = -1,1$, HA: $y = 0$; *x*-int: $(0,0)$, *y*-int: $(0,0)$



14. VA: $x = -2,2$, HA: $y = \frac{1}{4}$; *x*-int: $(-3,0), (3,0)$, *y*-int: $\left(0, \frac{9}{16}\right)$