NOTES: GRAPHING RATIONAL FUNCTIONS 1 DAY 6

Textbook Chapter 8.2

OBJECTIVE: Today you will learn how to graph rational functions!

For a fundraising project, you decide to create t-shirts for the Run for Hope. The cost of the artwork and permission to use it costs $850. In addition to these "one-time" charges, the unit cost of printing each t-shirt is $3.25.

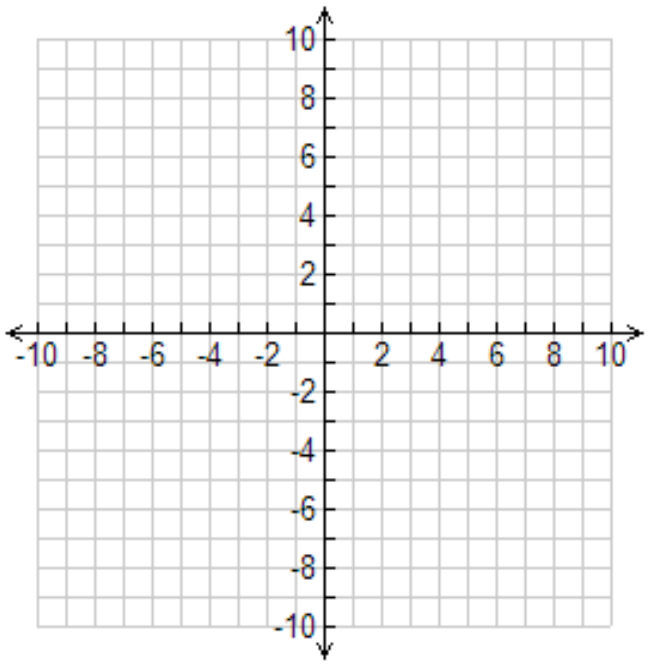
a. Write a model that gives the average cost per t-shirt as a function of the number of t-shirts made.

b. Graph the model and use the graph to estimate the number of t-shirts you need to print before the average cost drops to $5 a t-shirt. What happens to the average cost as the number of t-shirts printed increases?

GRAPHING RATIONAL FUNCTIONS

$$f(x)=\frac{1}{x}$$

Key Features:



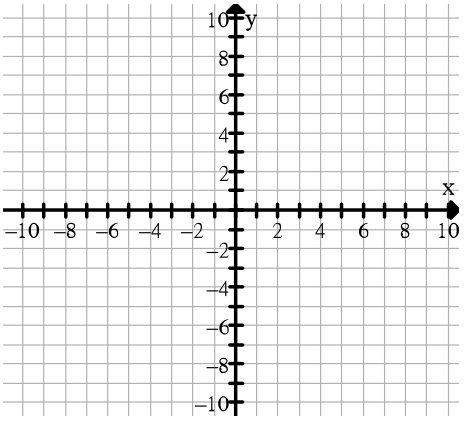
x	y
1	
2	
3	
10	
½	
1/3	
1/10	
-1	
-2	
-3	
-10	
-1/2	
-1/3	
-1/10	
0	

Graph a Rational Function of the Form $y = \frac{a}{x}$

1. **Draw asymptotes** *(dotted lines)* at y = 0 and x = 0
2. **Plot 2 points** on the left and right side of the vertical asymptote *(use easy numbers)*
3. **Draw the branches** of the hyperbola through the plotted points.

1. Graph $y = \frac{4}{x}$.

Identify the domain and range.

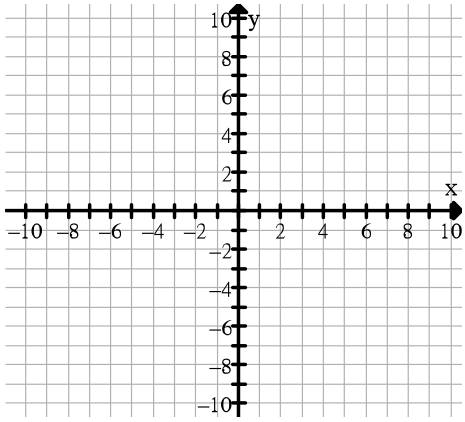


Domain:

Range:

2. Graph $y = \frac{-6}{x}$.

Identify the domain and range.



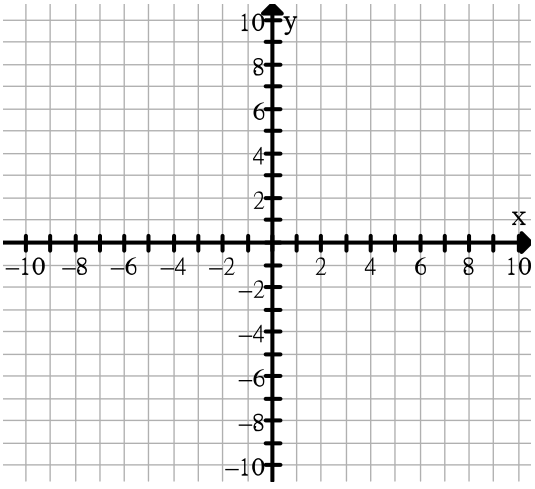
Domain:

Range:

Graph a Rational Function of the Form $y = \frac{a}{x-h} + k$

3. Graph $y = \frac{1}{x+2} - 3$

Asymptotes: x = y =

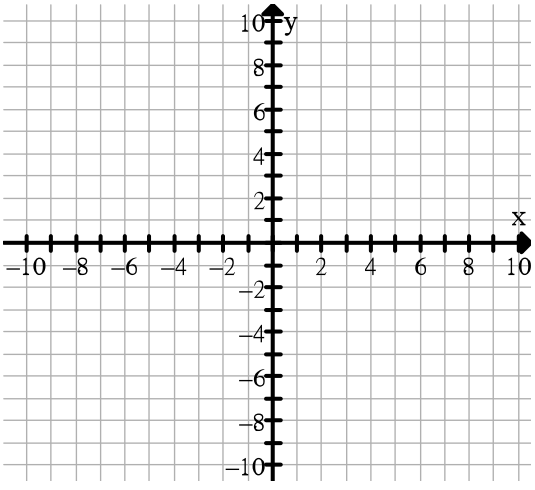


Domain:

Range:

4. Graph $y = \frac{-3}{x-1} + 2$

Asymptotes: x = y =



Domain:

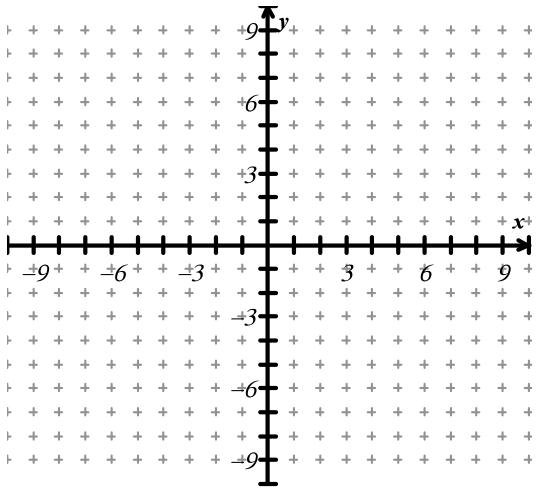
Range:

Find the vertical and horizontal asymptotes of the graph of the function.

1. $f(x)=\frac{4}{x-2}+1$	2. $f(x)=\frac{2x+2}{3x-4}$	3. $f(x)=\frac{x+1}{2x-3}$
4. $f(x)=\frac{4x}{2x+3}$	5. $f(x)=\frac{2x-1}{x-2}$	6. $f(x)=\frac{6x-1}{3x+6}$

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

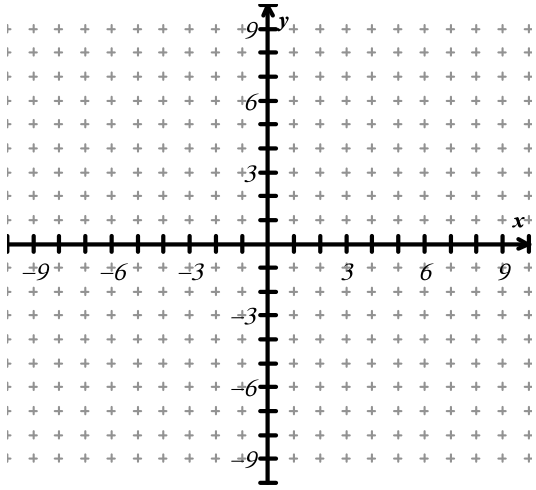
VA:	Domain:	Table	Graph
HA:	Range:		



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

Removable Discontinuities: _____

VA:	Domain:	Table	Graph
HA:	Range:		



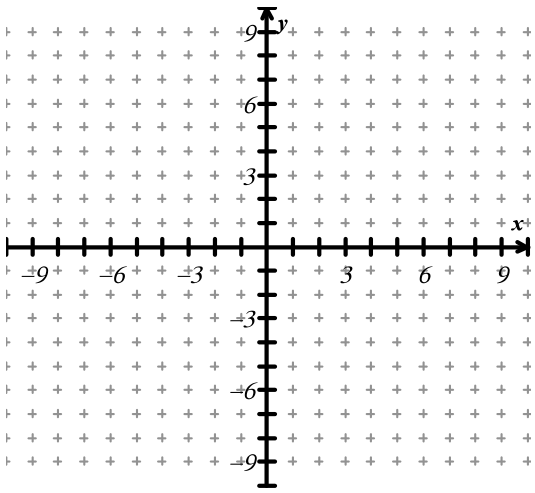
PRACTICE: GRAPHING RATIONAL FUNCTIONS 1 DAY 6

Find the vertical and horizontal asymptotes of the graph of the function.

1. $f(x)=\frac{6}{x-1}+5$	2. $f(x)=\frac{2x+4}{3x-1}$	3. $f(x)=\frac{x+2}{2x-1}$
4. $f(x)=\frac{3x}{x+3}$	5. $f(x)=\frac{3x-1}{x+3}$	6. $f(x)=\frac{10x-1}{3x+9}$

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

VA:	Domain:	Table	Graph
HA:	Range:		



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

VA:	Domain:	Table	Graph
HA:	Range: