

## 11.2 Graphing Rational Functions

1)

a)

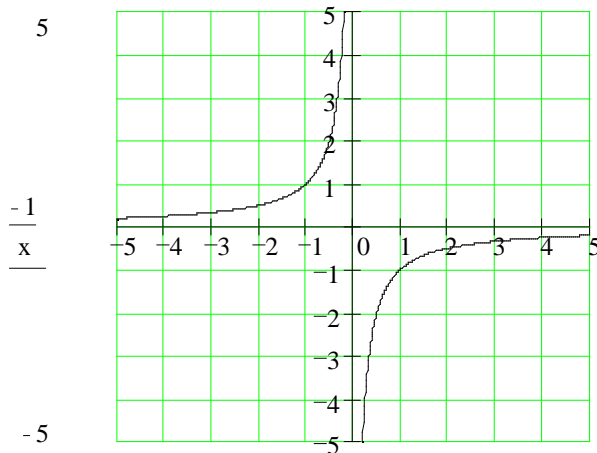
No. Items Produced	Average Cost
0	ERROR
25	\$23
50	\$15
75	\$12.33
100	11

c) As  $x$  get very large, the average cost approaches \$7 per item.

e) Division by zero is undefined.

3) Horizontal asymptote:  $y = 0$       Vertical asymptote:  $x = 1$ .

5) If the graph of  $f(x) = \frac{1}{x}$  is reflected over the  $x$ -axis, then it will appear in the second and fourth quadrants.



7) The graph of  $f(x) = \frac{1}{x}$  has been stretched away from the  $x$ -axis by a scale factor of 2 and has been reflected over the  $x$ -axis.

9) The graph of  $f(x) = \frac{1}{x}$  has shifted down 3 units.

11)

a) 
$$\frac{8x + 500}{x} = \frac{8x}{x} + \frac{500}{x}$$

b) 
$$\frac{8x}{x} + \frac{500}{x} = 8 + \frac{500}{x}$$

- c) The graph of  $y = 8 + \frac{500}{x}$  can be obtained by modifying the graph of  $f(x) = \frac{1}{x}$  by stretching it away from the  $x$ -axis by a scale factor of 500 and shifting it up 8 units.

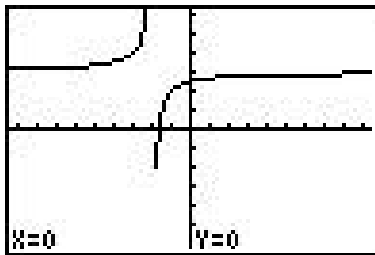
13)

- a) Quadrants III and IV  
 b) Domain =  $\{x : x \neq 0\}$       Range =  $\{y : y < 0\}$

15)

- a) No

17)



19)

$$\frac{x}{(x-1)(x+5)}$$