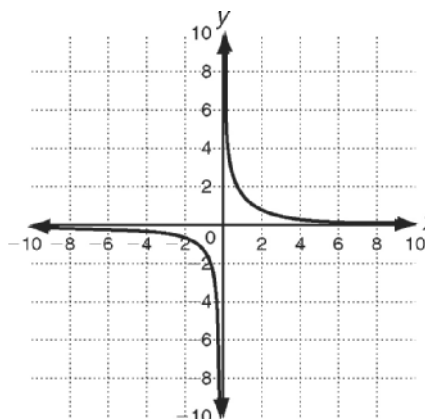


LESSON
8-4

Practice B
Rational Functions

Using the graph of $f(x) = \frac{1}{x}$ as a guide, describe the transformation and graph the function.



1. $g(x) = \frac{2}{x+4}$

Identify the asymptotes, domain, and range of each function.

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

3. $g(x) = \frac{1}{x+8} - 1$

Identify the zeros and asymptotes of the function. Then graph.

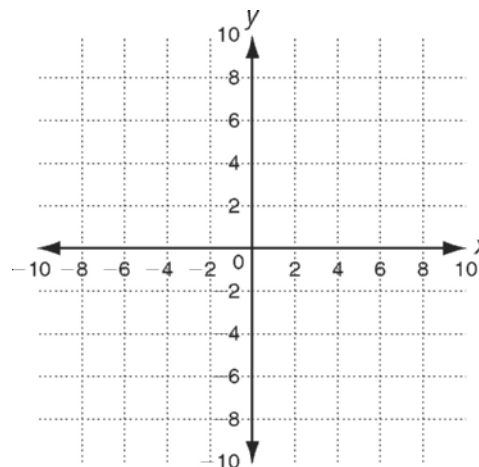
4. $f(x) = \frac{x^2 + 4x - 5}{x+1}$

a. Zeros:

b. Vertical asymptote:

c. Horizontal asymptote:

d. Graph.



Solve.

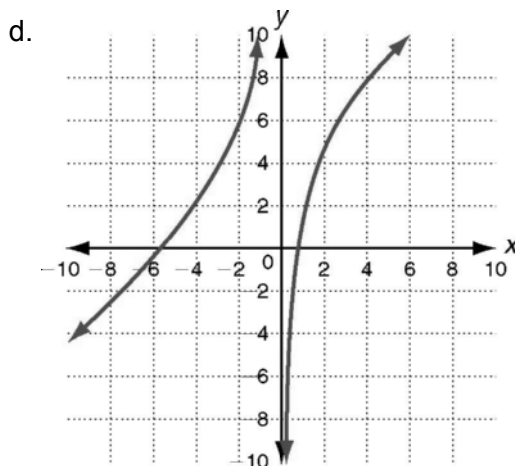
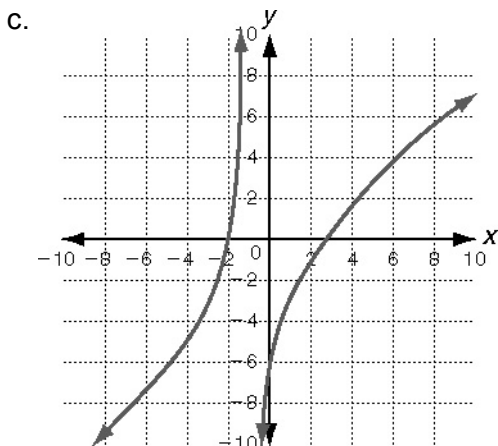
5. The number, n , of daily visitors to a new store can be modeled by the function

$n = \frac{(250x + 1000)}{x}$, where x is the number of days the store has been open.

a. What is the asymptote of this function and what does it represent? _____

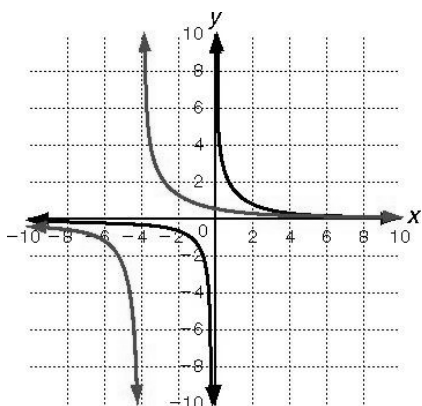
b. To the nearest integer, how many visitors can be expected on day 30? _____

- c. $y = -7$
 d. $\{x \mid x \neq -3\}$
 e. $\{y \mid y \neq -7\}$
4. a. $x = -2, x = 3$
 b. Vertical asymptote: $x = -1$; horizontal asymptote: none



5. a. The asymptote is 250; it is the average number of people who will visit the store each day, long after the store opens.
 b. 283

Practice B



- Translate 4 units left and vertically stretched by a factor of 2
- Vertical asymptote: $x = 3$; horizontal asymptote: $y = 5$; domain: $\{x \mid x \neq 3\}$; range: $\{y \mid y \neq 5\}$
- Vertical asymptote: $x = -8$; horizontal asymptote: $y = -1$; domain: $\{x \mid x \neq -8\}$; range: $\{y \mid y \neq -1\}$
- a. Zeros: -5 and 1
 b. Vertical asymptote: $x = -1$
 c. Horizontal asymptote: none

Practice C

- Vertical asymptote: $x = -5$; horizontal asymptote: $y = 7$; domain: $\{x \mid x \neq -5\}$; range: $\{y \mid y \neq 7\}$
- Vertical asymptote: $x = 9$; horizontal asymptote: $y = -\frac{1}{4}$; domain: $\{x \mid x \neq 9\}$; range: $\{y \mid y \neq -\frac{1}{4}\}$
- Vertical asymptote: $x = -\frac{2}{3}$; horizontal asymptote: $y = -12$; domain: $\{x \mid x \neq -\frac{2}{3}\}$; range: $\{y \mid y \neq -12\}$
- a. -3 and 3
 b. $x = -5$ and $x = 5$
 c. $y = 2$

