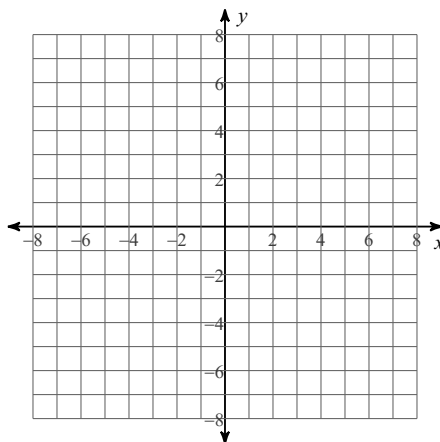
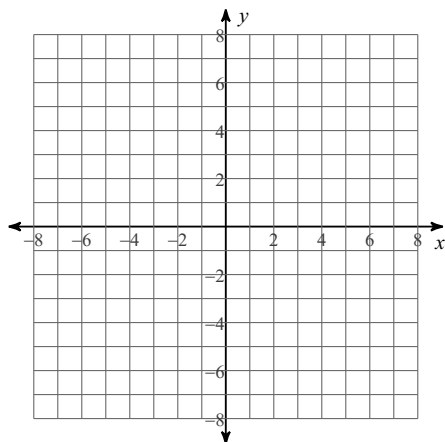


Rational Functions Review (Pt. 1) Test Review

Identify the domain and range of each. Then sketch the graph.

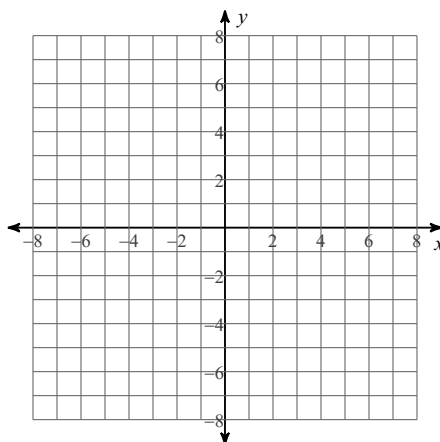
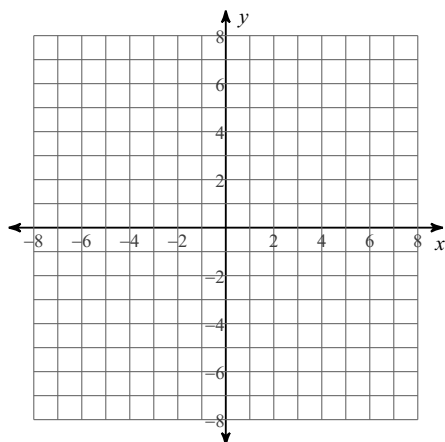
1) $f(x) = \frac{2}{x} + 3$

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



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

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



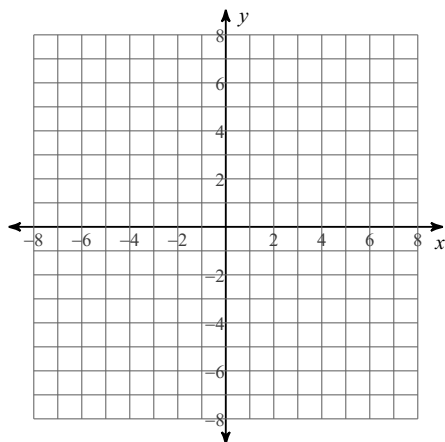
Solve each variation question by setting up an equation to find 'k', then answer the actual question.

- 5) The number of bricks laid varies directly with the amount of time spent. If 45 bricks are laid in 65 minutes, determine the equation that represents this situation. Also determine the time it would take to lay 500 bricks.

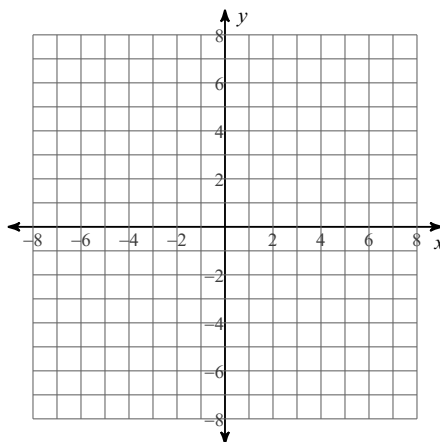
- 6) The cost c of materials for a deck varies jointly with the width w and the length l in feet. If $c = \$470.40$ when $w = 12'$ and $l = 16'$, find the cost of a $10' \times 25'$ deck.
- 7) The number of gallons (g) in a circular kiddie pool varies jointly with the square of the radius (r) and the depth (d). If a 2 foot deep pool has a radius of 4 ft, then the pool holds 754 gallons. Find the number of gallons in a 1.5' deep pool with a radius of 3 feet.
- 8) The time to complete a project varies inversely with the number of employees. If 3 people can complete the project in 7 days, how long will it take 5 people?
- 9) The weight of a person varies inversely as the square of the distance from the center of the earth. If the radius of the earth is 4000 miles, how much would a 180 pound person weigh, 2000 miles above the surface of the earth?
- 10) The strength of a rectangular beam varies jointly as its width and the square of its depth. If the strength of a beam three inches wide by 10 inches deep is 1200 pounds per square inch, what is the strength of a beam four inches wide and six inches deep?

Identify the holes, vertical asymptotes, x-intercepts, horizontal asymptote, and domain of each. Then sketch the graph.

11) $f(x) = \frac{3x^2 - 15x + 12}{x^2 - 3x}$



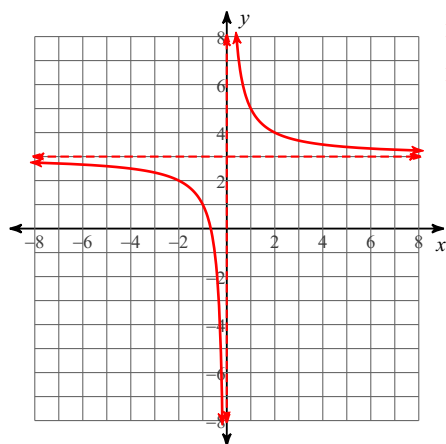
12) $f(x) = \frac{-3x - 6}{x^2 - 4}$



Rational Functions Review (Pt. 1) Test Review

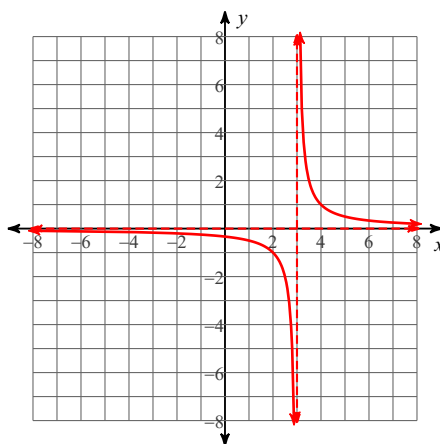
Identify the domain and range of each. Then sketch the graph.

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



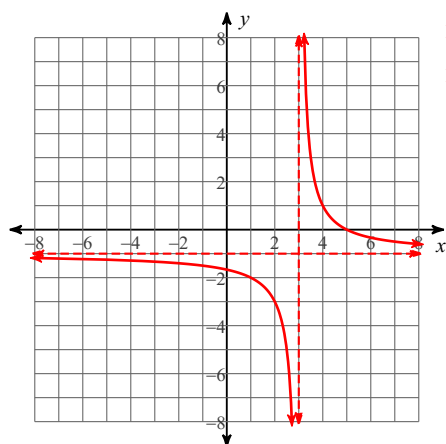
Domain:
All reals except 0
Range:
All reals except 3

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



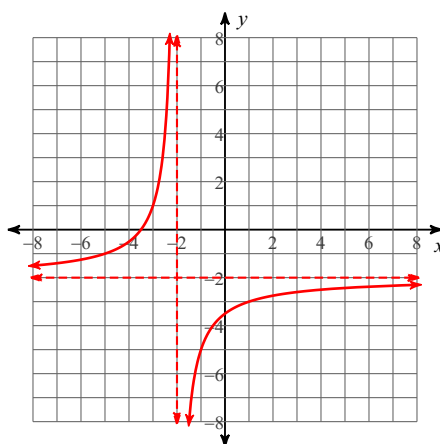
Domain:
All reals except 3
Range:
All reals except 0

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



Domain:
All reals except 3
Range:
All reals except -1

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



Domain:
All reals except -2
Range:
All reals except -2

Solve each variation question by setting up an equation to find 'k', then answer the actual question.

- 5) The number of bricks laid varies directly with the amount of time spent. If 45 bricks are laid in 65 minutes, determine the equation that represents this situation. Also determine the time it would take to lay 500 bricks.

$45 = k \cdot 65$ so $k = \frac{9}{13}$ and it would take 722.2 minutes.

- 6) The cost c of materials for a deck varies jointly with the width w and the length l in feet. If $c = \$470.40$ when $w = 12'$ and $l = 16'$, find the cost of a $10' \times 25'$ deck.

$$c = k \cdot w \cdot l, \text{ so } k = 2.45 \text{ and it would cost } \$612.50$$

- 7) The number of gallons (g) in a circular kiddie pool varies jointly with the square of the radius (r) and the depth (d). If a 2 foot deep pool has a radius of 4 ft, then the pool holds 754 gallons. Find the number of gallons in a 1.5' deep pool with a radius of 3 feet.

$$g = k \cdot dr^2 \text{ so } k = 23.5625 \text{ and it would hold } 318.09 \text{ gallons.}$$

- 8) The time to complete a project varies inversely with the number of employees. If 3 people can complete the project in 7 days, how long will it take 5 people?

$$t = \frac{k}{n} \text{ so } k = 21. \text{ It would take } 4.2 \text{ days.}$$

- 9) The weight of a person varies inversely as the square of the distance from the center of the earth. If the radius of the earth is 4000 miles, how much would a 180 pound person weigh, 2000 miles above the surface of the earth?

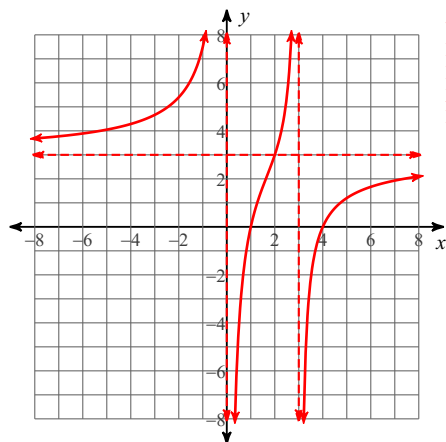
$$w = \frac{k}{d^2} \text{ so } k = 2,880,000,000 \text{ and the person would weigh } 80 \text{ lbs.}$$

- 10) The strength of a rectangular beam varies jointly as its width and the square of its depth. If the strength of a beam three inches wide by 10 inches deep is 1200 pounds per square inch, what is the strength of a beam four inches wide and six inches deep?

$$s = k \cdot w \cdot d^2 \text{ so } k = 4 \text{ and the beam would have a strength of } 576 \text{ psi.}$$

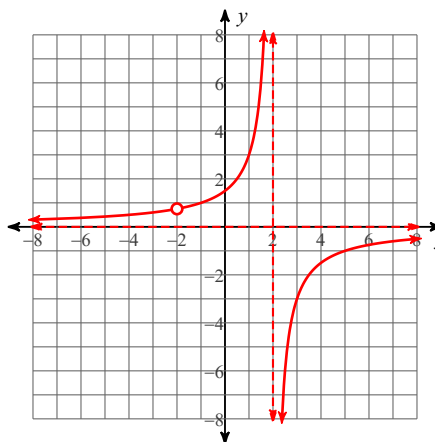
Identify the holes, vertical asymptotes, x-intercepts, horizontal asymptote, and domain of each. Then sketch the graph.

11) $f(x) = \frac{3x^2 - 15x + 12}{x^2 - 3x}$



Vertical Asym.: $x = 0, x = 3$
 Holes: None
 Horz. Asym.: $y = 3$
 X-intercepts: 4, 1
 Domain:
 All reals except 0, 3

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



Vertical Asym.: $x = 2$
 Holes: $x = -2$
 Horz. Asym.: $y = 0$
 X-intercepts: None
 Domain:
 All reals except 2, -2