

Rational Functions**End-of-Unit Assessment**

Circle the letter of the best answer.

1. Which simplified rational expression is equivalent to $\frac{36x^2 + 24x}{6x}$?

a. $6x + 4$

c. $6x + 24$

b. $\frac{6x^2 + 24x}{x}$

d. $6x^2 + 4x$

2. Which simplified rational expression is equivalent to $\frac{x+3}{x-5} \cdot \frac{3x^2+6x}{2x^2+7x+3} \cdot \frac{5+9x-2x^2}{x+2}$?

a. $\frac{3x}{x-5}$

c. $3x$

b. $\frac{5x-3x^2}{x-5}$

d. $-3x$

3. Which simplified rational expression is equivalent to $\frac{x}{x+1} \cdot \frac{5x}{2x-1}$?

a. $\frac{5x^2}{2x-1}$

c. $\frac{5x^2}{2x^2+x-1}$

b. $\frac{5x}{2x+1}$

d. $\frac{5x}{2x^2+x+2}$

4. Which simplified rational expression is equivalent to $\frac{x^2-11x+24}{3x+9} \div \frac{2x-16}{x+3}$?

a. $\frac{x-3}{2}$

c. $\frac{24-11x+x^2}{6x-48}$

b. $\frac{x-3}{6}$

d. $\frac{x^2-9x-40}{3x+9}$

continued

5. Which simplified rational expression is equivalent to $\frac{x^2-9}{x+1} \div \frac{x+3}{x}$?
- a. $\frac{x^3+3x^2-9x-27}{x^2+x}$
- b. $\frac{x^3-x^2-13x-3}{-x^2+x}$
- c. $\frac{x^2-9}{4x+4}$
- d. $\frac{x^2-3x}{x+1}$
6. Which simplified rational expression is equivalent to $\frac{x^2-2x-15}{x^2+5x+6} + \frac{8x}{x+2}$?
- a. $\frac{9x-13}{x+2}$
- b. $\frac{9x-5}{x+2}$
- c. $\frac{x^2+6x-15}{x^2+5x+6}$
- d. $8x-3$
7. Which simplified rational expression is equivalent to $\frac{x^2+11x+30}{x^2-2x-35} - \frac{2x-1}{x-7}$?
- a. $\frac{x+7}{7-x}$
- b. $\frac{x-5}{x-7}$
- c. -1
- d. $\frac{5-x}{x-7}$
8. What is the solution to the equation $\frac{1}{8} - \frac{3}{4x} = -\frac{1}{x}$?
- a. $x = -2$
- b. $x = 1$
- c. $x = 2$
- d. $x = 14$

continued

9. What is one solution to the equation $\frac{4x+2}{x-2} + \frac{9}{4x} = -1$?

a. $x = \frac{4}{3}$

c. $x = -\frac{3}{4}$

b. $x = \frac{3}{4}$

d. $x = -\frac{4}{3}$

10. Nash has had 13 hits in 52 at-bats in his baseball games. If x represents the number of consecutive hits he needs in order to raise his batting average to 0.350, which equation can be solved to find that number?

a. $\frac{13}{52+x} = 0.350$

c. $\frac{13}{52} + \frac{1}{x} = 0.350$

b. $\frac{13+x}{52+x} = 0.350$

d. $\frac{1}{13} + \frac{1}{52} + \frac{1}{x} = 0.350$

11. Chloe and Daja work in a restaurant. Chloe can prepare for opening in 15 minutes less time than it takes Daja. Chloe and Daja can prepare for opening in 32 minutes if they work together. Approximately how many minutes does it take Chloe to prepare for opening if she works alone? Assume both women work at steady rates and their rates are not affected by either working alone or working together.

a. 35 minutes

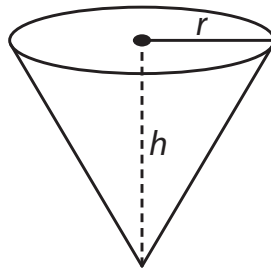
c. 57 minutes

b. 47 minutes

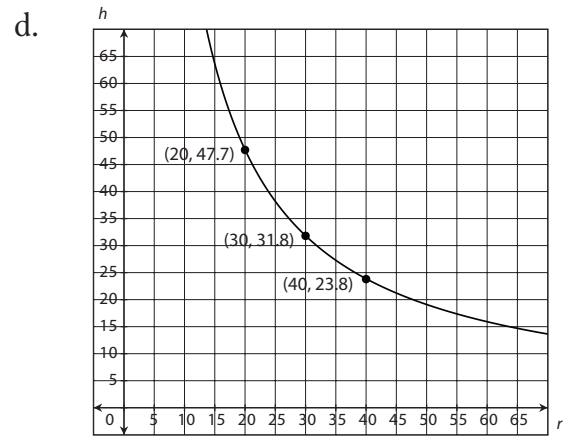
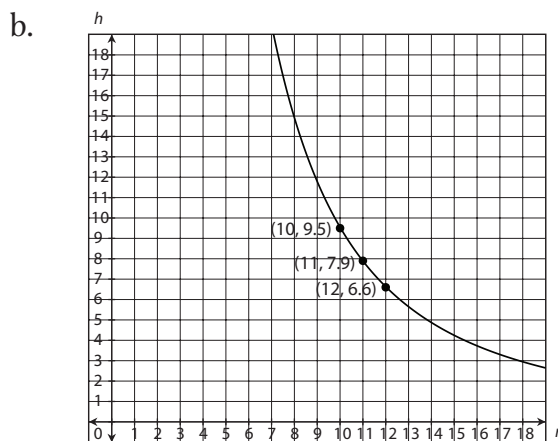
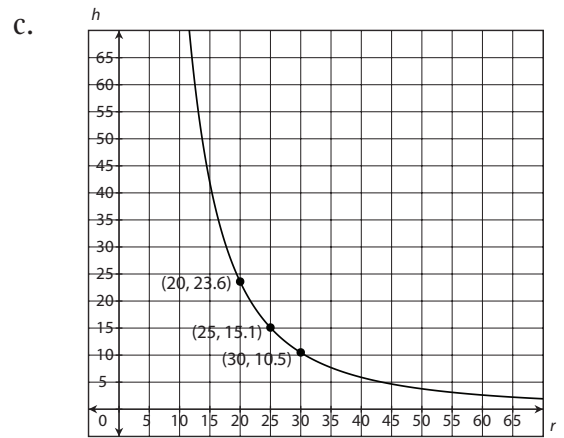
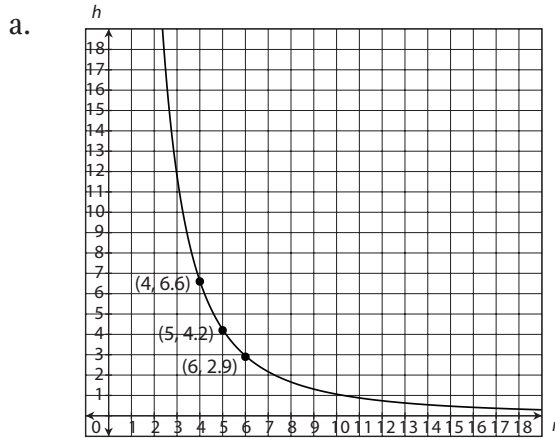
d. 72 minutes

continued

12. Mona sells specialty containers. One of her customers needs cone-shaped plastic containers for shipping fresh flower bouquets. Each container must have a volume of 1,000 cubic inches.

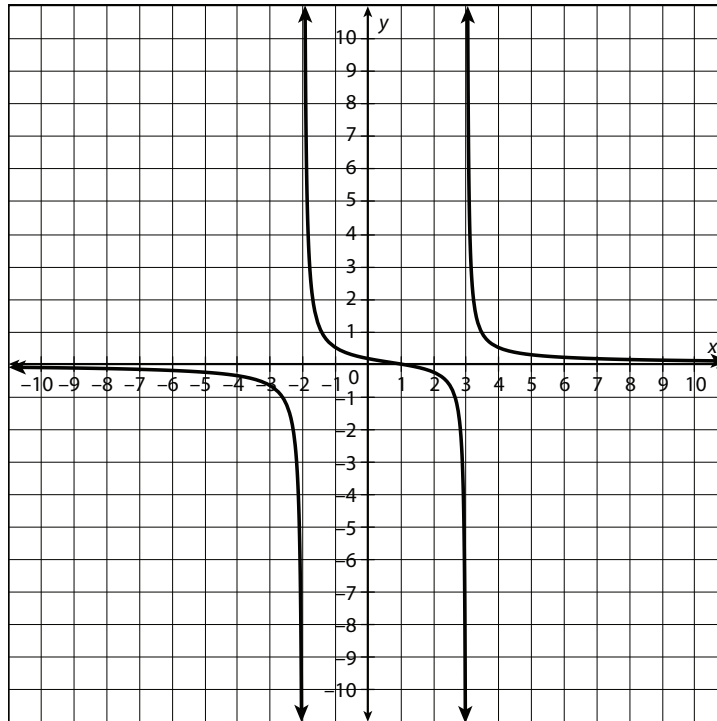


Which graph shows the relationship between r , the radius of the base, and h , the height, of a cone that fits the requirement? The volume formula for a cone is $V = \frac{1}{3}\pi r^2 h$.



continued

13. Which function is shown in the graph?



a. $f(x) = \frac{x-1}{x^2-x-6}$

b. $f(x) = \frac{x^2-1}{x^2-x-6}$

c. $f(x) = \frac{x^2-x-6}{x-1}$

d. $f(x) = \frac{x^2-x-6}{x^2-1}$

14. What are the asymptotes of $f(x) = \frac{6x-1}{2x+7}$?

a. $x = -3.5$ and $y = 3$

b. $x = 3.5$ and $y = 3$

c. $x = 3$ and $y = -3.5$

d. $x = 3$ and $y = 3.5$

15. What is the end behavior of the function $f(x) = \frac{4x-3}{2x+10}$?
- As x approaches infinity, $f(x)$ approaches infinity and as x approaches negative infinity, $f(x)$ approaches negative infinity.
 - As x approaches infinity, $f(x)$ approaches 2 and as x approaches negative infinity, $f(x)$ approaches 2.
 - As x approaches infinity, $f(x)$ approaches -0.3 and as x approaches negative infinity, $f(x)$ approaches -0.3 .
 - As x approaches infinity, $f(x)$ approaches 0 and as x approaches negative infinity, $f(x)$ approaches 0.