Chapter 8 Take-Home Quiz #16

Form G

Do you know HOW?

Write a function that models each variation.

1. $x = -1$ when $y = 5$. y varies inversely as x.

2. $x = 3$ and $y = 12$ when $z = 2$. z varies directly with y and inversely with x.

Is the relationship between the values in each table a direct variation, an inverse variation, or neither? Write an equation to model any direct or inverse variation.

3.

x	−2	4	6
y	4	−8	−12

4.

x	−2	−1	3
y	$-\frac{1}{2}$	−1	$\frac{1}{3}$

For each rational function, identify any holes or horizontal or vertical asymptotes of its graph.

5. $y = \dfrac{x}{x-3}$

6. $y = \dfrac{-2(x-8)}{8-x}$

7. $y = \dfrac{x+3}{(x+2)(x+3)}$

8. $y = \dfrac{1}{x+4} - 3$

Sketch the graph of each rational function.

9. $y = \dfrac{x}{x(x-2)}$

10. $y = \dfrac{1}{x+4} - 3$

Simplify each rational expression. State any restrictions on the variable.

11. $\dfrac{3x^2 - 12}{x^2 - x - 6}$

12. $\dfrac{2x^2 - x}{4x^2 - 4x + 1} \div \dfrac{x}{8x - 4}$

Find the least common multiple of each pair of polynomials.

13. $x^2 - 16$ and $5x + 20$

14. $7(x-2)(x+5)$ and $2(x+5)^2$

Simplify each sum or difference.

15. $\dfrac{2}{x+5} + \dfrac{x}{x-5}$

16. $\dfrac{3x}{x^2 - 4} - \dfrac{1}{x^2}$

Chapter 8 Take-Home Quiz #16 (continued) *Form G*

Simplify each complex fraction.

17. $\dfrac{1 + \dfrac{2}{3}}{\dfrac{3}{4} - \dfrac{1}{3}}$

18. $\dfrac{1 + \dfrac{1}{x}}{5 - \dfrac{1}{y}}$

Solve each equation. Check each solution.

19. $\dfrac{x}{3} + \dfrac{x}{2} = 10$

20. $\dfrac{y-3}{5} = \dfrac{y+1}{7}$

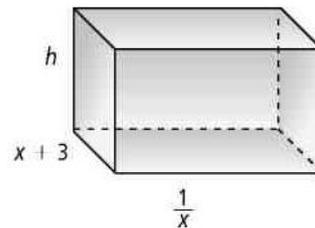**21.** $\dfrac{x}{2} = 2x - 3$

22. $-\dfrac{x}{4} = \dfrac{2x}{3}$

23. $\dfrac{1}{x} - \dfrac{1}{6} = \dfrac{4}{3x^2}$

24. $\dfrac{2x-4}{x-5} = 0$

Do you UNDERSTAND?

25. Reasoning Write an expression in simplest form for the height of the rectangular prism shown at the right.

$$V = \frac{x^2 + x - 6}{x}$$