



4-3 Additional Practice

Multiplying and Dividing Rational Expressions

Write an equivalent expression. Specify the domain.

1. $\frac{4x+6}{2x+3}$

$$2; x \neq -\frac{3}{2}$$

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

$$\frac{3x-6}{x-3}; x \neq -2, 3$$

3. $\frac{x^2+13x+40}{x^2-2x-35}$

$$\frac{x+8}{x-7}; x \neq -5, 7$$

What is the simplified form of each rational expression? Specify the domain.

4. $\frac{2x^2+11x+5}{3x^2+17x+10}$

$$\frac{2x+1}{3x+2}; x \neq -5, -\frac{2}{3}$$

5. $\frac{6x^2+5xy-6y^2}{3x^2-5xy+2y^2}$

$$\frac{2x+3y}{x-y}; x \neq -y, \frac{2}{3}y$$

6. $\frac{x^2+3x-18}{x^2-36}$

$$\frac{x-3}{x-6}; x \neq \pm 6$$

Find the product and the domain.

7. $\frac{5a}{5a+5} \cdot (10a+10)$

$$10a; a \neq -1, 0$$

8. $\frac{x^2-5x}{x^2-3x} \cdot \frac{x+3}{x-5}$

$$1; x \neq 0, 3, 5$$

9. $\frac{5y-20}{3y+15} \cdot \frac{7y+35}{10y+40}$

$$\frac{7(y-4)}{6(y+5)}; x \neq -5, -4$$

Find the quotient and the domain.

10. $\frac{7x^4}{24y^5} \div \frac{21x}{12y^4}$

$$\frac{x^3}{6y}; x, y \neq 0$$

11. $\frac{y^2-49}{(y-7)^2} \div \frac{5y+35}{y^2-7y}$

$$\frac{y}{5}; y \neq 0, \pm 7$$

12. $\frac{y^2-5y+4}{y^2-1} \div \frac{y^2-9}{y^2+5y+4}$

$$\frac{y^2-16}{y^2-9}; y \neq \pm 1, \pm 3, -4$$

13. A farmer must decide whether to build a cylindrical grain silo with radius r , or a rectangular grain silo with width r and length $2r$. Both silos have the same height h . Which has the greater ratio of volume to surface area? Explain.

The cylinder, because the ratio for the cylinder is $\frac{rh}{2r+2h}$, and the ratio for the rectangular prism is $\frac{rh}{2r+3h}$.

14. How do you know what values to exclude from the domain?

Answers may vary. Sample: Any value of the variable that makes the denominator equal to zero.