

## LESSON

## 8-2

## Practice B

**Multiplying and Dividing Rational Expressions**

**Simplify. Identify any  $x$ -values for which the expression is undefined.**

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

2.  $\frac{4x^6}{2x^4}$

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

4.  $\frac{x^3 + x^2 - 20x}{x^2 - 16}$

5.  $\frac{3x^2 - 9x - 12}{6x^2 + 9x + 3}$

6.  $\frac{9 - 3x}{15 - 2x - x^2}$

**Multiply. Assume all expressions are defined.**

7.  $\frac{4x + 16}{2x + 6} \cdot \frac{x^2 + 2x - 3}{x + 4}$

8.  $\frac{x + 3}{x - 1} \cdot \frac{x^2 - 2x + 1}{x^2 + 5x + 6}$

**Divide. Assume all expressions are defined.**

9.  $\frac{5x^6}{x^2y} \div \frac{10x^2}{y}$

10.  $\frac{x^2 - 2x - 8}{x^2 - 2x - 15} \div \frac{2x^2 - 8x}{2x^2 - 10x}$

**Solve. Check your solution.**

11.  $\frac{x^2 + x - 12}{x - 3} = 15$

12.  $\frac{2x^2 + 8x - 10}{2x^2 + 14x + 20} = 4$

**Solve.**

13. The distance,  $d$ , traveled by a car undergoing constant acceleration,  $a$ , for a time,  $t$ , is given by  $d = v_0t + \frac{1}{2}at^2$ , where  $v_0$  is the initial velocity of the car.

Two cars are side by side with the same initial velocity. One car accelerates,  $a = A$ , and the other car does not accelerate,  $a = 0$ . Write an expression for the ratio of the distance traveled by the accelerating car to the distance traveled by the nonaccelerating car as a function of time.

12.  $\frac{2x+4}{5x-10}$

13.  $\frac{1}{2y}$

14.  $x = 4$

15.  $x = 3$

16.  $x = 2$

17.  $x = 1$

**Practice B**

1.  $\frac{x+2}{x-4}; x \neq -1, x \neq 4$

2.  $2x^2; x \neq 0$

3.  $\frac{-x^2}{2x-3}; x \neq 1, x \neq \frac{3}{2}$

4.  $\frac{x^2+5x}{x+4}; x \neq 4, x \neq -4$

5.  $\frac{x-4}{2x+1}; x \neq -1, x \neq -\frac{1}{2}$

6.  $\frac{3}{x+5}; x \neq 3, x \neq -5$

7.  $2x - 2$

8.  $\frac{x-1}{x+2}$

9.  $\frac{x^2}{2}$

10.  $\frac{x+2}{x+3}$

11.  $x = 11$

12.  $x = -3$

13.  $1 + \frac{At}{2V_0}$

**Practice C**

1.  $\frac{3y^4}{5x}$

2.  $\frac{8}{3(x-5)}$

3.  $4(x+3)$

4.  $\frac{x-1}{12(x-2)}$

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

6.  $\frac{1}{(x-5)(x-1)}$

7.  $\frac{2y}{x^2}$

8.  $\frac{x+3}{2(x-1)}$

9.  $x = 17$

10.  $x = 19$

11. No solution

12.  $x = 9$

13. 1 meter

**Reteach**

1.  $\frac{x-3}{x+5}, -1, -5$

2.  $\frac{20}{4} \cdot \frac{x^9}{x^3}; 5x^6; 0$

3.  $\frac{x(x-4)}{(x-4)(x-1)}; \frac{x}{x-1}; 1, 4$

4.  $\frac{6x^4}{y^4}$

5.  $\frac{2x}{x-2}$

6.  $\frac{2}{x-1}$

7.  $\frac{x}{y^4}$

8.  $\frac{4}{3x}$

9.  $\frac{x+1}{x+4}$

**Challenge**

1.  $x^{2y} - 3$

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

3.  $j - k$

4. 1

5.  $\frac{2(2a+1)}{a+7}$

6.  $\frac{p+1}{p(p-1)}$

7.  $\frac{(m+n)^2}{n-m}$

8.  $\frac{a^n - 1}{a^n + 4}$

9.  $\frac{z^2}{4(y-x)}$

10.  $y = \frac{7-x}{x-3}; x \neq -3 \text{ or } 3$

**Problem Solving**

1. a.  $T_1 = 2\pi r_1$

b.  $T_2 = 2\pi(r_1 + 5)$

c.  $\frac{r_1 + 5}{r_1}$

2. a.

$$\frac{(r_1 + 10)(r_1 - 5)}{(r_1^2 - 25)} = \frac{(r_1 + 10)(r_1 - 5)}{(r_1 + 5)(r_1 - 5)} = \frac{r_1 + 10}{r_1 + 5};$$

Mari is correct.

3. a.  $\frac{T_2}{T_1} = 1.071$

b.  $\frac{T_3}{T_2} = 1.067$