

LESSON
6-3**Practice C*****Adding and Subtracting Rational Expressions***

Add or subtract. Identify any x -values for which the expression is undefined.

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

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

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

4. $\frac{3}{x-5} - \frac{1}{x^2-7x+10}$

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

6. $\frac{3x}{x^2-x-6} - \frac{5}{x^2-8x+15}$

Simplify. Assume all expressions are defined.

7. $\frac{\frac{x+4}{x^2-8}}{\frac{x+4}{x-2}}$

8. $\frac{\frac{x}{x+2}}{2x + \frac{x}{5}}$

9. $\frac{\frac{x-7}{x+2}}{\frac{x-5}{x+6}}$

10. $\frac{\frac{x-6}{x^2+3}}{\frac{x}{x^2+2x+1}}$

Solve.

11. The electric potential generated by a certain arrangement of electric charges is given by $\frac{e}{x-4} + \frac{e}{x+1}$, where e is the fundamental unit of electric charge and x measures the location where the potential is being measured. Express the electric potential as a rational expression.

$$5. \frac{2x^2 + 7x + 4}{x^2 - x - 12}; x \neq 4, x \neq -3$$

$$6. \frac{2x^2 - 5x - 7}{x^2 - 3x - 18}; x \neq 6, x \neq -3$$

$$7. \frac{x^2 - 4x + 2}{x^2 - 2x - 15}; x \neq -3, x \neq 5$$

$$8. \frac{-2x^2 - 3x + 6}{x^2 - 7x - 18}; x \neq -2, x \neq 9$$

$$9. \frac{x^2 - 4x + 3}{x^2 + 11x + 30} \quad 10. \frac{12x - 24}{x^3 + 3x^2 + x + 3}$$

11. $2.6\bar{6}$ packages per hour

Practice C

$$1. \frac{13x - 2}{2x + 6}; x \neq -3$$

$$2. \frac{x^2 + 28x}{3x^2(x + 4)}; x \neq -4, x \neq 0$$

$$3. \frac{4x^2 - 2x - 4}{3x^2 - 11x - 4}; x \neq -\frac{1}{3} \text{ and } x \neq 4$$

$$4. \frac{3x - 7}{x^2 - 7x + 10}; x \neq 5, x \neq 2$$

$$5. \frac{8x^2 + 4x - 3}{8x^2 - 2}; x \neq \pm \frac{1}{2}$$

$$6. \frac{3x^2 - 20x - 10}{x^3 - 6x^2 - x + 30}; x \neq -2, x \neq 3, x \neq 5$$

$$7. \frac{x - 2}{x^2 - 8} \quad 8. \frac{5}{11x + 22}$$

$$9. \frac{x^2 - x - 42}{x^2 - 3x - 10}$$

$$10. \frac{x^3 - 4x^2 - 11x - 6}{x^3 + 3x} \quad 11. \frac{e(2x - 3)}{x^2 - 3x - 4}$$

Review for Mastery

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

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

$$3. \frac{-3x - 5}{x - 1}; 1$$

$$4. \frac{3x + 10}{3x + 7}; -\frac{7}{3}$$

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

$$6. \frac{2x + 9}{x^2 - 1}; \pm 1$$

$$7. \frac{x - 1 + (3x^2 - 6x)}{(x + 2)(x - 2)} = \frac{3x^2 - 5x - 1}{(x + 2)(x - 2)}$$

$$x \neq -2, 2$$

$$8. \frac{4x - 1}{(x + 2)(x + 1)} + \frac{3}{x + 1} \left(\frac{x + 2}{x + 2} \right)$$

$$\frac{4x - 1 + 3x + 6}{(x + 2)(x + 1)}$$

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

$$x \neq -2, -1$$

$$9. (x - 3)(x + 3)(x + 2)$$

Challenge

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

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

$$3. \frac{5}{x + 1} + \frac{3}{x - 2} - \frac{1}{x + 3}$$

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

Problem Solving

$$1. a. \frac{d}{6} + \frac{d}{3}$$

$$b. 2d$$

$$c. \frac{2d}{\frac{d}{6} + \frac{d}{3}}$$

d. Vicki is correct. Possible answer:
Lorena calculated the average speed as if it took the same amount of time for each leg of the trip. Vicki took into consideration the time for each leg.

$$2. 4.8 \text{ knots}$$

$$3. D$$

$$4. C$$

$$5. B$$

$$6. D$$