

Simplify each expression.

1. $\frac{(2x^3y^2)^3}{-18x^5y^4}$

2. $\frac{10y^2 + 15y}{35y^2 - 5y}$

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

4. $\frac{a - y}{w + n} \cdot \frac{w^2 - n^2}{y - a}$

5. $\frac{a^5y^3}{wy^7} \div \frac{a^3w^2}{w^5y^2}$

6. $\frac{3x + 6}{x^2 - 9} \div \frac{6x^2 + 12x}{4x + 12}$

$$7. \quad \frac{9-a^2}{a^2+5a+6} \div \frac{2a-6}{5a+10}$$

$$8. \quad \frac{\frac{2x+1}{x}}{\frac{4-x}{x}}$$

$$9. \quad \frac{\frac{x^2-9}{4}}{\frac{3-x}{8}}$$

Find the LCM of each set of polynomials.

1. a^2b^3c, abc^4

2. $3, 4w+2, 4w^2-1$

Simplify each expression.

3. $\frac{5}{12x^4y} - \frac{1}{5x^2y^3}$

4. $\frac{4m}{3mn} + 2$

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

6. $\frac{2-5m}{m-9} + \frac{4m-5}{9-m}$

7. The expressions $\frac{5x}{2}$, $\frac{20}{x+4}$, and $\frac{10}{x-4}$ represent the lengths of the sides of a triangle. Write a simplified expression for the perimeter of the triangle.

8. $\frac{5}{2x-12} - \frac{20}{x^2-4x-12}$

9. $\frac{1}{5n} - \frac{3}{4} + \frac{7}{10n}$

Assignment

Solve each equation or inequality. Check your solutions.

1. $\frac{12}{x} + \frac{3}{4} = \frac{3}{2}$

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

3. $\frac{p+10}{p^2-2} = \frac{4}{p}$

4. $\frac{5}{y-5} = \frac{y}{y-5} - 1$

5.
$$\frac{6}{x-1} = \frac{4}{x-2} + \frac{2}{x+1}$$

6.
$$\frac{4x}{x-1} - \frac{5x}{x-2} = \frac{2}{x^2 - 3x + 2}$$

7. The lens equation $\frac{1}{p} + \frac{1}{q} = \frac{1}{f}$ relates the distance p of an object from a lens, the distance q of the image of the object from the lens, and the focal length f of the lens. What is the distance of an object from a lens if the image of the object is 5 centimeters from the lens and the focal length of the lens is 4 centimeters? **Substitute values for f and q , then solve for p .**

12.1 Answer Key

1. $-\frac{4x^4y^2}{9}$

2. $\frac{2y+3}{7y-1}$

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

4. $n - w$

5. $\frac{a^2w^2}{y^2}$

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

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

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

9. $-2(x+3)$

12.2 Answer Key

1. $a^2b^3c^4$

2. $6(2w+1)(2w-1)$

3. $\frac{25y^2 - 12x^2}{60x^4y^3}$

4. $\frac{2(2+3n)}{3n}$

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

6. $\frac{7-9m}{m-9}$

7. $\frac{5(x^3 - 4x - 16)}{2(x-4)(x+4)}$

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

9. $\frac{3(6-5n)}{20n}$

12.3 Answer Key

1. 16

2. -1, 2

3. $\frac{4}{3}, 2$

4. All real numbers except 5

5. No Solution

6. -1, -2

7. 20 cm.