

$$\frac{c+6d}{c-d}$$

Reduce each expression to lowest terms.

(1) $\frac{-2x-4}{x^2-3x-10}$

$$\frac{-2(x+2)}{(x+2)(x-5)} = \frac{-2}{x-5}$$

(2) $\frac{x^2y^6}{x^2y^3+x^4y^2}$

$$\frac{x^2y^6y^4}{x^2y^3(y+x^2)} = \frac{y^4}{y+x^2}$$

(3) $\frac{2c^2+2cd-60d^2}{2c^2-12cd+10d^2}$

$$\frac{2(c^2+cd-30d^2)}{2(c^2-6cd+5d^2)} = \frac{2(c-5d)(c+6d)}{2(c-d)(c-5d)}$$

Perform the indicated operations.

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

$$\frac{x-1}{(x+2)(x+2)} \cdot \frac{x+2}{(x-1)(x+3)} = \frac{1}{(x+2)(x+3)}$$

(5) $\frac{x^3-5x^2+6x}{2x^2-6x} \cdot \frac{4x^3+32}{2x^3-8x}$

$$\frac{x(x^2-5x+6)}{2x(x-3)} \cdot \frac{4(x^3+8)}{2x(x^3-4)} = \frac{x(x-2)(x-3)}{2x(x-3)} \cdot \frac{4(x+2)(x^2-2x+4)}{2x(x+2)(x-2)}$$

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

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

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

(7) $\frac{x+5}{x^2-4x+3} + \frac{x-1}{x^2+x-12}$

$$\frac{x+5}{(x-1)(x-3)} + \frac{x-1}{(x-3)(x+4)}$$

$$\frac{(x+5)(x+4)}{(x-1)(x-3)(x+4)} + \frac{(x-1)(x-1)}{(x-1)(x-3)(x+4)}$$

$$\frac{x^2+9x+20+x^2-1}{(x-1)(x-3)(x+4)} = \frac{2x^2+9x+19}{(x-1)(x-3)(x+4)}$$

(8) $\frac{7}{x-2} - \frac{6}{x(x-2)} - \frac{3}{x}$

$$\frac{7x}{x(x-2)} - \frac{6}{x(x-2)} - \frac{3(x-2)}{x(x-2)} = \frac{7x-6-3x+6}{x(x-2)} = \frac{4x}{x(x-2)} = \frac{4}{x-2}$$

Simplify each complex fraction.

(9) $\frac{12a^2b^3 \left(\frac{1}{2a^2b} - 2a \right)}{12a^3b^3 \left(\frac{1}{4ab^3} + \frac{1}{3b} \right)}$

$$\frac{6b^2(1) - 2a(12a^2b^3)}{3a(1) + 4a^3b^2(1)} = \frac{6b^2 - 24a^3b^3}{3a + 4a^3b^2}$$

$$\frac{6b^2(1 - 4a^3b)}{a(3 + 4ab^2)}$$

(10) $\frac{(y^2-2) \left(\frac{1}{y^2-2} - 3 \right)}{(y^2-2) \left(\frac{5}{y^2-2} + 4 \right)}$

$$\frac{1-3(y^2-2)}{5+4(y^2-2)} = \frac{1-3y^2+6}{5+4y^2-8}$$

$$\frac{7-3y^2}{4y^2-3}$$