

Complex fractions: a fraction within a fraction.

Steps:

1. You are trying to get rid of the fractions within the fraction. Therefore, you will look for a common denominator.
***You may have to factor first to find the common denominator.
2. Multiply every term by that common denominator.
3. Simplify.

KCF

$$1) \frac{\frac{3}{2x}}{\frac{6}{8x}}$$

$$\frac{3}{2x} \cdot \frac{8x}{6} = \frac{24x}{12x} = \boxed{2}$$

$$2) \frac{\frac{y \cdot 1 + 3 \cdot x}{x \cdot 5 + 4 \cdot y}}{1 - y} = \frac{y \cdot 1 + 3x \cdot y}{x \cdot 5 + 4x \cdot y} = \frac{y + 3xy}{5x + 4xy}$$

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

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

$$4) \frac{\frac{(x+4) \cdot \frac{2}{x+4} + 2(x+4)}{(x+4) \cdot 1 + \frac{3}{x+4} \cdot (x+4)}}{x+4+3} = \frac{2 + 2x + 8}{x+4+3}$$

$$= \frac{2x+10}{x+7} = \frac{2(x+5)}{x+7}$$

$$\boxed{\frac{y+x}{2x-y}}$$

KCF

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

KCF

$$6) \frac{\frac{20}{x-1}}{\frac{6}{3x-3}}$$

$$\frac{x+1}{x^2-1} \cdot \frac{x-1}{x}$$

$$\frac{\cancel{x+1}}{(x+1)\cancel{(x-1)}} \cdot \frac{\cancel{x-1}}{x}$$

$$\frac{1}{x}$$

$$\frac{20}{x-1} \cdot \frac{3x-3}{6}$$

$$\frac{20}{\cancel{x-1}} \cdot \frac{3\cancel{(x-1)}}{6} = \frac{60}{6} = \boxed{10}$$