

What's  
the  
difference?

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

$$\frac{1}{4} + \frac{x}{3} = \frac{x}{8}$$

### Expressions (NOT Equations!)

Simplify:

$$\frac{16x^2}{4x-12} \div \frac{x^2-14x}{x^2-49}$$

$$\frac{7}{x+2} - \frac{5}{x}$$

### Equations

Solve:

Method 1:  
Combine, then solve.

$$\frac{x}{4} + \frac{3x}{5} = 2$$

Method 2:  
Multiply by the Lowest Common Denominator.

$$\frac{x}{4} + \frac{3x}{5} = 2$$

# Solving Rational EQUATIONS

Method 1: Combine, then solve.

$$\frac{x-3}{2} + \frac{3x-1}{4} = \frac{4x+7}{6} + \frac{1-5x}{8}$$

Method 2: Multiply by the Lowest Common Denominator.

$$\frac{x-3}{2} + \frac{3x-1}{4} = \frac{4x+7}{6} + \frac{1-5x}{8}$$

Method 1: Combine, then solve.

$$\frac{10}{x(x-2)} + \frac{4}{x} = \frac{5}{x-2}$$

Method 2: Multiply by the Lowest Common Denominator.

$$\frac{10}{x(x-2)} + \frac{4}{x} = \frac{5}{x-2}$$

What's  
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$$\frac{1}{x-6} + \frac{x}{x-2}$$

$$\frac{1}{x-6} + \frac{x}{x-2} = \frac{4}{x^2 - 8x + 12}$$

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$$\mathbf{1} \quad \frac{7}{x+2} + \frac{5}{x-2} = \frac{10x-2}{x^2-4}$$

$$\mathbf{2} \quad \frac{x}{x-2} + \frac{1}{x-4} = \frac{2}{x^2-6x+8}$$

$$\mathbf{3} \quad \frac{2x-4}{x^2-10x+16} = \frac{2}{x+2}$$

## CHALLENGE

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

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

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

