

Fractions with UNLIKE Denominators!!

$$\frac{1}{3} + \frac{2}{7} = \frac{7}{21} + \frac{6}{21}$$

$$\boxed{\text{LCD}=21} = \frac{13}{21}$$

$$\frac{2}{5} - \frac{2}{15} = \frac{6}{15} - \frac{2}{15}$$

$$\boxed{\text{LCD}=15} = \frac{4}{15}$$

Adding/Subtracting Rationals with UNLIKE Denominators

STEPS:

1. Factor the denominators.
2. Find the LCD.
3. Write new fractions using the LCD.
4. Add or Subtract.
5. Simplify the top: Use the Distributive Property, Combine Like Terms.
6. Factor the Numerator.
7. Simplify: Cancel or Reduce.

Find the least common denominator

1. $\frac{x+1}{5}, \frac{2x}{6}$ **LCD = 30**

2. $\frac{1}{36x}, \frac{3x+1}{9x^5}$ **LCD = $36x^5$**

Find the least common denominator

3. $\frac{5x + 9}{16x^3}, \frac{7}{24x^2}$ **LCD = $48x^3$**

4. $\frac{x}{x - 5}, \frac{2x^3}{x + 7}$ **LCD = $(x - 5)(x + 7)$**

Write the sum in simplest form.

$$8. \quad \frac{1}{x^2} + \frac{2}{x} =$$

$$9. \quad \frac{3}{15x^2} + \frac{1}{9x^3} =$$

Write the sum in simplest form.

$$8. \quad \frac{1}{x^2} + \frac{2}{x} = \frac{1}{x^2} + \frac{2x}{x^2} = \frac{2x+1}{x^2}$$

LCD = x^2

$$9. \quad \frac{3}{15x^2} + \frac{1}{9x^3} = \frac{9x}{45x^3} + \frac{5}{45x^3} = \frac{9x+5}{45x^3}$$

LCD = $45x^3$

Simplify the expression.

$$10. \quad \frac{3}{x^2} - \frac{2}{3x} =$$

$$11. \quad \frac{2}{p} - \frac{3-10p}{5p^2} =$$

Simplify the expression.

$$10. \quad \frac{3}{x^2} - \frac{2}{3x} = \frac{9}{3x^2} - \frac{2x}{3x^2} = \frac{-2x+9}{3x^2}$$

$$\text{LCD} = 3x^2$$

$$11. \quad \frac{2}{p} - \frac{(3-10p)}{5p^2} = \frac{10p}{5p^2} - \frac{(3-10p)}{5p^2}$$

$$\text{LCD} = 5p^2$$

$$= \frac{10p - (3-10p)}{5p^2}$$

$$= \frac{20p-3}{5p^2}$$

Simplify the expression.

$$12. \quad \frac{3}{x-6} + \frac{1}{x} =$$

$$13. \quad \frac{x-5}{x+5} - \frac{x+2}{x-2} =$$

Simplify the expression.

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

$LD = x(x-6)$

$$= \frac{3x}{x(x-6)} - \frac{(x-6)}{x(x-6)}$$

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

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

13.

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

$LD = (x+5)(x-2)$

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

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

~~$\frac{x^2 - 7x + 10}{(x+5)(x-2)} - \frac{x^2 + 7x + 10}{(x+5)(x-2)}$~~

$$= \frac{-14x}{(x+5)(x-2)}$$