

8-3 Day 1 Adding and Subtracting Rational Expressions



Goal: Add and subtract rational expressions  
with and without common denominators

Apr 30-10:19 AM

$$\frac{\cancel{(x-4)}(x+2)}{x^2-2x-8} \cdot \frac{\cancel{(3x+4)}(x+2)}{3x^2+10x-8}$$

$$\frac{9x^2-16}{x^2-16}$$

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

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

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What happens to the denominator when you add fractions?

Add or Subtract.

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

May 4-1:03 PM

- Get common denominator
- Add or Subtract
- Factor and Reduce

- $\frac{m^2 + 2m}{m+4} + \frac{3m+4}{m+4} = \frac{m^2 + 5m + 4}{m+4}$   
 $\frac{(m+1)(m+4)}{m+4} = m+1$
- $\frac{3y^2}{y+1} + \frac{3y}{y+1} = \frac{3y^2 + 3y}{y+1}$   
 $\frac{3y(y+1)}{y+1} = 3y$
- $\frac{3k-18}{k^2-16} + \frac{6}{k^2-16}$   
 $\frac{3(k-4)}{(k+4)(k-4)} + \frac{3}{k+4} = \frac{3}{k+4}$
- $\frac{6y-6}{y^2+4y-12} + \frac{-(y+4)}{y^2+4y-12}$   
 $\frac{5(y-2)}{(y+6)(y-2)} - \frac{5}{y+6} = \frac{5y-10}{(y+6)(y-2)} - \frac{5}{y+6}$

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Adding and Subtracting Rational expressions with unlike monomial denominators

Think LCM!!

4: 4, 8, 12, 16, ...  
 3: 3, 6, 9, 12, 15, ...

$\frac{3 \cdot 1}{3 \cdot 4} + \frac{2 \cdot 1}{3 \cdot 4}$

$\frac{3}{12} + \frac{8}{12} = \frac{11}{12}$

9.  $\frac{5 \cdot 7}{5 \cdot 9x} - \frac{1 \cdot 9}{5x \cdot 9}$

$\frac{35}{45x} - \frac{9}{45x} = \frac{26}{45x}$

10.  $\frac{10^2 \cdot 2}{2 \cdot 5n^2} + \frac{4n \cdot 5}{2n^2 \cdot 5}$

$\frac{4}{10n^2} + \frac{20n}{10n^2}$

$\frac{24(5n+1)}{5 \cdot 10n^2} = \frac{2(5n+1)}{5n^2}$

11.  $\frac{4}{3d} - \frac{2}{2d^2}$

$d \cdot \frac{4}{3d} - \frac{1 \cdot 3}{d^2 \cdot 3}$

$\frac{4d}{3d^2} + \frac{-3}{3d^2}$

$\frac{4d-3}{3d^2}$

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~~Example~~

$\frac{2 \cdot 6}{2 \cdot 5x^2} + \frac{3}{10x^2}$

$\frac{12}{10x^2} + \frac{3}{10x^2}$

$\frac{9 \cdot 8}{9 \cdot 7x} - \frac{5 \cdot 7}{9x \cdot 7}$

$\frac{63x}{63x} - \frac{63x}{63x}$

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Assignment:

Puzzle sheet (both sides)

Apr 28-12:38 PM