


2.3 Add & Subtract Monomial Denominators.notebook




2.3 Add & Subtract Monomial Denominators

Recall: In order to add and subtract fractions, we need a COMMON DENOMINATOR. The same idea applies for rational expressions.

Add or subtract. *Lowest Common Multiple*

$\frac{4 \cdot 2}{4 \cdot 3} + \frac{3 \cdot 3}{4 \cdot 3}$ <p>LCM: 12</p> $= \frac{8}{12} + \frac{9}{12}$ $= \boxed{\frac{17}{12}}$	$\frac{4 \cdot 3}{4 \cdot 5} - \frac{9}{20}$ <p>LCM: 20</p> $= \frac{12}{20} - \frac{9}{20}$ $= \boxed{\frac{3}{20}}$	$\frac{3}{3} \cdot \frac{1}{6} - \frac{7 \cdot 2}{9 \cdot 2}$ <p>LCM: 18</p> $= \frac{3}{18} - \frac{14}{18}$ $= \boxed{\frac{-11}{18}} - \frac{11}{18} - \frac{11}{18}$
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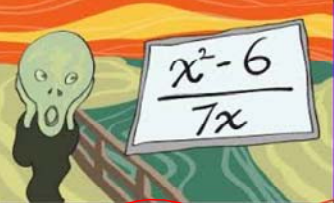


In terms of rational expressions, we find a common denominator by finding the least common multiple of the denominators:

Ex.)

$\text{a) } \frac{2 \cdot 5}{2 \cdot 3x^2} + \frac{x \cdot 3x^2}{2 \cdot 3x^2}$ <p>LCM: $6x^2$</p> $= \frac{10}{6x^2} + \frac{3x^3}{6x^2}$ $= \boxed{\frac{10+3x^3}{6x^2}} \quad x \neq 0$	<p>*biggest # of variables.</p> $\text{b) } \frac{5x}{5x} \cdot \frac{1}{6xy} - \frac{2}{15x^2} \cdot \frac{2y}{2y}$ <p>LCM: $30x^2y$</p> $= \frac{5x}{30x^2y} - \frac{4y}{30x^2y}$ $= \boxed{\frac{5x-4y}{30x^2y}} \quad x, y \neq 0$
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Ex.) $\frac{3(x-2)}{4x^2} + \frac{(x+6) \cdot 2x}{6x \cdot 2x}$ $\frac{9b(2a+1)}{9b \cdot 2a^2b} + \frac{(-b+3) \cdot 2a}{9ab^2 \cdot 2a}$ *negative

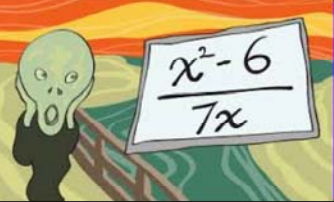


LCM: $12x^2$ LCM: $18a^2b^2$

$= \frac{3x-6}{12x^2} + \frac{2x^2+12x}{12x^2}$ $= \frac{18ab+9b}{18a^2b^2} + \frac{-2ab+6a}{18a^2b^2}$

$= \frac{2x^2+15x-6}{12x^2}$ $= \frac{16ab+9b+6a}{18a^2b^2} \quad a, b \neq 0$

$x \neq 0$

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10. Here is a student's solution for subtracting rational expressions.
Identify the error in the solution. Write a correct solution.

$$\begin{aligned} \frac{3x+6}{2x^2} - \frac{x-4}{3x} &= \frac{(3x+6) \cdot 3}{2x^2 \cdot 3} - \frac{(-x+4) \cdot 2x}{3x \cdot 2x} \\ &= \frac{3(3x+6)}{6x^2} - \frac{2x(x-4)}{6x^2} \\ &= \frac{9x+18-2x^2-8x}{6x^2} \\ &= \frac{-2x^2+x+18}{6x^2}, x \neq 0 \\ &= \frac{-2x^2+17x+18}{6x^2}, x \neq 0 \end{aligned}$$

They did not put the negative on the x and the -4 , they need to do distributive property.

Pg. 249 # 1ab, 3a, 4.

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