What's Going On?

Checking In	Homework Logs
Minds on	It's Elementary... Again, Again!
Action!	Adding and Subtracting Rational Expressions
Consolidation	Exit Card

Learning Goal - I will be able to and and and subtract rational expressions.

Checking In

F.F.M.

Where's my calkalatur?!

Evaluate.

$$\frac{3}{5} - \frac{1}{2} + \frac{2}{3} - \frac{5}{4}$$

Find LCM of 5, 2, 3, 4.

$= 60$

$$\frac{3}{5}\,{}^{12\times} - \frac{1}{2}\,{}^{30\times} + \frac{2}{3}\,{}^{20\times} - \frac{5}{4}\,{}^{15\times}$$

$$= \frac{36}{60} - \frac{30}{60} + \frac{40}{60} - \frac{75}{60}$$

$$= \frac{36 - 30 + 40 - 75}{60}$$

$$= \frac{-29}{60}$$

Two-Column Quiz

Column 1: Homework tonight, not for marks

Column 2: Tomorrow in class, for marks.

Unit Test Next Tuesday

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Minds on

It's Elementary... Again

Evaluate. No calculators!

$$\frac{2}{3}\cdot\frac{(4)}{(4)} + \frac{3}{4}\cdot\frac{(3)}{(3)}$$

$$= \frac{8}{12} + \frac{9}{12}$$

$$= \frac{8 + 9}{12}$$

$$= \frac{17}{12}$$

Minds on

It's Elementary... Again

Evaluate. Show your steps.

NO CALCULATORS

$\frac{(2)}{(2)}\frac{1}{2}+\frac{3}{4}$

$=\frac{5}{4}$

$\frac{(4)}{(4)}\frac{3}{5}+\frac{7}{4}\frac{(5)}{(5)}$ $12+35$

$=\frac{47}{20}$

$\frac{(5)}{(5)}\frac{2}{3}+\frac{4}{5}\frac{(3)}{(3)}$ $10+12$

$=\frac{22}{15}$

Minds on

It's Elementary... Again

Evaluate. Show your steps.

NO CALCULATORS

$\frac{7}{8} - \frac{1}{2}$ (4)

$7 - 4$

$= \frac{3}{8}$

$\frac{5}{6} - \frac{2}{3}$ (2)

$5 - 4$

$= \frac{1}{6}$

$\frac{4}{3} - \frac{3}{5}$ (5) (3)

$20 - 9$

$= \frac{11}{15}$

Minds on

It's Elementary... Again

Evaluate. Show your steps.

NO CALCULATORS

$\frac{1}{2} + \frac{3}{4} - \frac{1}{5}$

Lowest common multiple of 2, 4 and 5 is 20.

Get each denominator to 20 by multiplying.

$= \frac{10+15-4}{20}$

$= \frac{21}{20}$

$\frac{3}{4} + \frac{5}{3} - \frac{1}{5}$

Lowest common multiple of 4, 3 and 5 is 60.

Get each denominator to 60 by multiplying.

$= \frac{45+100-12}{60}$

$= \frac{133}{60}$

$\frac{3}{7} + \frac{1}{2} - \frac{1}{3}$

Lowest common multiple of 7, 2 and 3 is 42.

Get each denominator to 42 by multiplying.

$= \frac{18+21-14}{42}$

$= \frac{25}{42}$

Minds on

It's Secondary...

Evaluate. Show your steps.

NO CALCULATORS

(3) $\frac{3}{2x^2} + \frac{1}{3x}$ (2x) (3)

LCM = $6x^2$

Unnecessary

$\left(\frac{9}{6x^2} + \frac{2x}{6x^2}\right)$

$= \frac{9+2x}{6x^2}$, $x \neq 0$

$(x^2)\frac{7}{4x} + \frac{5}{2x^3}(2)$ (x^2)

LCM = $4x^3$

$\frac{7x^2+10}{4x^3}$

$x \neq 0$

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

LCM = $8x^4$

$= \frac{x^4+6}{8x^4}$

Action!

Adding and Subtracting Rational Expressions

To add or subtract rational expressions:

1. Factor.
2. State restrictions. (zeros of the denominators)
3. Find the lowest common denominator (LCD).
   - The LCD is the product of any common factors and all the unique factors.
   - The LCD is **not always** the product of all the denominators.
4. Rewrite each term using the LCD as the denominator.
5. Add and/or subtract the numerators.
6. Simplify.
7. Restate restrictions (holes and asymptotes)

Action!

Adding and Subtracting Rational Expressions

Example 1: Simplify and state any restrictions on the variables: $\frac{3}{8x^2} + \frac{1}{4x} - \frac{5}{6x^3}$

$\frac{3}{8x^2} + \frac{1}{4x} - \frac{5}{6x^3}$ $x \neq 0$

LCM is $24x^3$

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

$= \frac{9x + 6x^2 - 20}{24x^3}$

$= \frac{6x^2 + 9x - 20}{24x^3}$ $, x \neq 0$

Action!

Adding and Subtracting Rational Expressions

Example 2: Simplify and state any restrictions on the variables: $\frac{3n}{2n+1} + \frac{4}{n-3}$

$$\frac{3n}{2n+1} + \frac{4}{n-3}$$

$n \neq -\frac{1}{2}$ $\quad n \neq 3$

$$\frac{(n-3)}{(n-3)}\frac{3n}{(2n+1)} + \frac{4}{(n-3)}\frac{(2n+1)}{(2n+1)}$$

$$\frac{3n(n-3) + 4(2n+1)}{(n-3)(2n+1)}$$

$$= \frac{3n^2 - 9n + 8n + 4}{(n-3)(2n+1)}$$

$$= \frac{3n^2 - n + 4}{(n-3)(2n+1)}, \quad n \neq -\frac{1}{2}, 3$$

Action!

Adding and Subtracting Rational Expressions

Example 3: Simplify and state any restrictions on the variables: $\frac{2t}{t^2-1} - \frac{t+2}{t^2+3t-4}$

$$\frac{2t}{t^2-1} - \frac{t+2}{t^2+3t-4}$$

$$= \frac{(t+4)\,2t}{(t+4)(t+1)(t-1)} - \frac{t+2\quad(t+1)}{(t+4)(t-1)(t+1)}$$

$$t \neq -4, -1, 1$$

$$= \frac{2t(t+4) - (t+2)(t+1)}{(t+4)(t+1)(t-1)}$$

$$= \frac{2t^2+8t - (t^2+3t+2)}{(t+4)(t+1)(t-1)}$$

$$= \frac{2t^2+8t-t^2-3t-2}{(t+4)(t+1)(t-1)}$$

$$= \frac{t^2+5t-2}{(t+4)(t+1)(t-1)}, t \neq -4, -1, 1$$

Consolidation

Exit Card

Simplify and state restrictions.

$$\frac{4x}{x^2+6x+8} - \frac{3x}{x^2-4}$$

Consolidation

Start, Stop, Continue

Consolidation

Homework!

Pg. 128: 5 - 10, ***12***

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Review Pg 132-133
1-15 *3,5