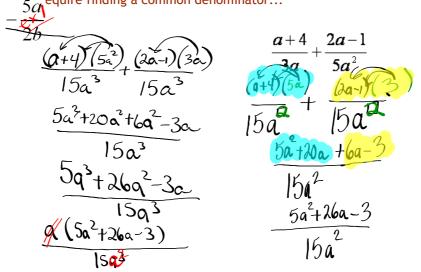Let's try a couple more examples using monomial denominators
equire finding a common denominator...

$-\dfrac{5a}{2b}$

$$\dfrac{(a+4)(5a^2)}{15a^3} + \dfrac{(2a-1)(3a)}{15a^3}$$

$$\dfrac{5a^2+20a^2+6a^2-3a}{15a^3}$$

$$\dfrac{5a^3+26a^2-3a}{15a^3}$$

$$\dfrac{a(5a^2+26a-3)}{15a^3}$$

$$\dfrac{a+4}{3a} + \dfrac{2a-1}{5a^2}$$

$$\dfrac{(a+4)(5a)}{15a^2} + \dfrac{(2a-1)(3)}{15a^2}$$

$$\dfrac{5a^2+20a+6a-3}{15a^2}$$

$$\dfrac{5a^2+26a-3}{15a^2}$$

$$\dfrac{a(3a^3)}{a^3\,b}$$

$$\dfrac{2}{3} + \dfrac{5}{12}$$

$$\dfrac{8}{12} + \dfrac{5}{12}$$

$$\dfrac{13}{12}$$

$$\dfrac{24}{36} + \dfrac{15}{36}$$

$$\dfrac{39}{36}$$

$$\dfrac{13}{12}$$

Adding/Subtracting Rational Expressions

$$\frac{2}{7} + \frac{3}{4}$$

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

$$\frac{3}{5} - \frac{4}{25}$$

$$\frac{15}{25} - \frac{4}{25}$$

$$\frac{11}{25}$$

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

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

$$\frac{15 - 4}{25}$$

$$11/25$$

3, 6, 9, (12)

$$\frac{1}{3} + \frac{1}{(12)}$$

$$\frac{4}{12} + \frac{1}{12}$$

$$\frac{5}{12}$$

$$\frac{12}{36} + \frac{3}{36}$$

$$\frac{15}{36}$$

$$\frac{5}{12}$$

Fractions → Add/Subtract.

$$\frac{3}{4} + \frac{2}{7}$$

$$\frac{21}{28} + \frac{8}{28}$$

$$\frac{29}{28}$$

$$\frac{3}{4} + \frac{2}{7}$$

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

WARM UP PASS IN

Do on your own paper

3 ① $\dfrac{6x^3}{-x^2} \cdot \dfrac{x^5}{18x} \div \dfrac{8}{6x^6}$

4 ② $\dfrac{x^2+7x}{x^2-1} \cdot \dfrac{x^2+3x+2}{x^2+14x+49}$

6 ③ $\dfrac{x^2-4}{2x^2+11x+5} \cdot \dfrac{2x+3}{x^2-x-6} \cdot \dfrac{x^2+2x-15}{20x^3+30x^2}$

5d)

$$\frac{4z}{xy} - \frac{9x}{yz}$$

$$\frac{4z^2}{xyz} - \frac{9x^2}{xyz}$$

$$\frac{4z^2 - 9x^2}{xyz}$$ $\boxed{\begin{array}{l} x \neq 0 \\ y \neq 0 \\ z \neq 0 \end{array}}$

$$\frac{(2z-3x)(2z+3x)}{xyz}$$

5b)

$$\frac{3}{2x} + \frac{1}{6}$$

$$\frac{9}{6x} + \frac{1x}{6x}$$

$$\frac{9+x}{6x}$$ $\boxed{x \neq 0}$

5f) $\dfrac{6xy}{a^2b} - \dfrac{2x}{ab^2y} + \dfrac{1}{1}$

$$\frac{6xy^2b}{a^2b^2y} - \frac{2xa}{a^2b^2y} + \frac{a^2b^2y}{a^2b^2y}$$

$$\frac{6xy^2b - 2xa + a^2b^2y}{a^2b^2y}$$

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$$\frac{n^2-4}{n+1} \quad \text{14}$$

$$n-2 \quad \textcircled{1}$$

$$\frac{n^2-4}{n+1} \div n-2$$

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

$$\frac{n+2}{n+1} \quad \longleftarrow \text{thickness}$$

4

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

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

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

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

$$\frac{2(x+1)}{(x+3)(x-5)}$$

$$\underline{4}$$

11c   length $= 2x-3$
width $= x+1$ $V = \ell wh$
height $= ?$ $\dfrac{V}{\ell w} = h$
Volume $= x^2 + 2x + 1$

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

$$\dfrac{(x+1)(x+1)}{(2x-3)(x+1)} \qquad h = \dfrac{x+1}{2x-3}$$

What if the denominators are not monomials???

$$\dfrac{2}{x-2} - \dfrac{5}{x+8}$$

$$\dfrac{2(x+8)}{(x-2)(x+8)} \ominus \dfrac{5(x-2)}{(x-2)(x+8)}$$

$$\dfrac{4}{x^2 - 16} + \dfrac{3}{x^2 + 8x + 16}$$

$$\dfrac{2x+16 - 5x + 10}{(x-2)(x+8)}$$

$$\dfrac{-3x + 26}{(x-2)(x+8)}$$

$$\frac{4}{x^2-16}+\frac{3}{x^2+8x+16}$$

$\frac{3}{20}+\frac{3}{25}$

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

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

$$\frac{4x+16+3x-12}{(x-4)(x+4)^2}=\frac{7x+4}{(x-4)(x+4)^2}$$

Try $\dfrac{7}{x^2+6x+8}-\dfrac{4}{x^2+7x+12}$

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

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

$$\frac{7x+21-4x-8}{(x+2)(x+4)(x+3)}$$

$$\frac{3x+13}{(x+2)(x+4)(x+3)}$$

$$\frac{3}{20}+\frac{3}{25}\longrightarrow 100$$

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

$$(4)(5)(5)$$

7

$$\frac{1}{12} + \frac{1}{15}$$

$$\frac{n}{(3)(4)} + \frac{n}{(3)(5)}$$

$$\overline{(3)(4)(5)}$$

$$\frac{1}{x^2+7x+12} + \frac{1}{x^2+6x+8}$$

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

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

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

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

$$\frac{1}{8} + \frac{1}{15} = \frac{}{120}$$

$$\frac{1}{(2)(4)} + \frac{1}{(3)(5)}$$

$$\frac{1}{3} + \frac{1}{12} = \frac{}{12}$$

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

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

9

$$\frac{1}{12} - \frac{2}{15}$$

$$\frac{1}{(4)(3)} - \frac{2}{(3)(5)}$$

$$\overline{60} \qquad \overline{(4)(3)(5)}$$

$$\frac{2}{7} + \frac{3}{4}$$

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

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Remember to ALWAYS factor everywhere possible FIRST!!!

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

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

$$\frac{2w^2 + 2w - 4 - 3w^2 - 6w + 2w^2 - 2w}{(w)(w-1)(w+2)}$$

$$\frac{w^2 - 6w - 4}{(w)(w-1)(w+2)}$$

$$\frac{4}{y^2 - 4} - \frac{2}{y+2}$$

$$\frac{4}{(y-2)(y+2)} - \frac{2}{(y+2)}$$

$$\frac{4 - 2(y-2)}{(y-2)(y+2)}$$
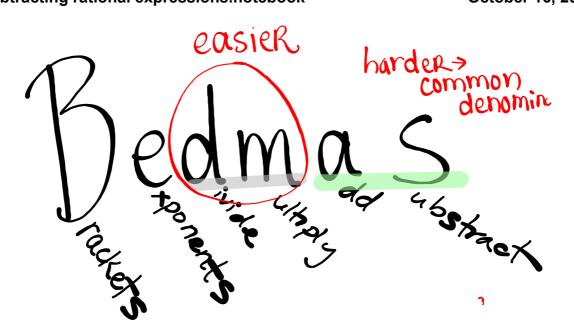
$$\frac{4 - 2y + 4}{(y-2)(y+2)}$$

$$\frac{(-2y+8)}{(y-2)(y+2)}$$

$$\frac{-2(y-4)}{(y-2)(y+2)}$$

Try these examples...Remember to FACTOR first!

$$\frac{x+2}{x^2-6x+5} - \frac{5}{x^2+2x-35}$$

$$\frac{2x}{x^2+4x-12} + \frac{3}{5x^4-20x^2}$$

Do you really understand??...Let's find out...

$$\frac{2x-3}{3x^2} + \frac{3x+3}{9x}$$

easier

harder→
common
denomin

B e d m a S

Brackets   xponents   ivide   ultply   dd   ubstract

$$-\frac{1}{2} = -\frac{1}{2} = \frac{1}{-2}$$

Practice Problems...

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#1, 3, 5, 6, 7, 8,

Attachments

Mathematical Pathways Description.docx

Pre-Calculus 110 - Fall 2012.doc