

Friday November 18, 2011  
 HW#22  
 Aim: How do we ADD and subtract RATIONAL Expressions?  
 Test#4 Tuesday 11/22/2011 BASED ON HW#20  
 HW#8-#20 11/30/2011 AT 11:45pm (END OF MP2)  
 Tutoring: WED/FRI Room 319 3-4:30pm.  
 Do Now:

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

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Different Method to Solve

1)  $\frac{3}{5} + \frac{1}{3} = \frac{(3 \cdot 3) + (5 \cdot 1)}{(5 \cdot 3)} = \frac{9+5}{15} = \frac{14}{15}$   
 2)  $\frac{3}{5} + \frac{1}{3} = \frac{9+5}{15} = \frac{14}{15}$   
 LCD (Least Common Denominator) = 15  
 3)  $\frac{3}{5} + \frac{1}{3} = 0.6 + 0.333333$   
 $= 0.933333 \dots$

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1)  $\frac{3}{5} + \frac{1}{3} = \frac{9}{15} + \frac{5}{15}$   
 $= \frac{14}{15}$

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I- Rational Expressions

1) SAME Denominator  
 $\frac{x+2}{x} + \frac{2x-5}{x} = \frac{x+2+2x-5}{x} = \frac{3x-3}{x}$   
 LCD = x  
 OR =  $\frac{3(x-1)}{x}$

2) Try it!  
 $\frac{3a}{a+1} - \frac{a}{a+1} = \frac{2a}{a+1}$

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3) DIFFERENT Denominators

1)  $\frac{2a+2}{2(a+1)} + \frac{1}{a^2-1} = \frac{(a-1)+2}{2(a+1)(a-1)} = \frac{a+1}{2(a+1)(a-1)}$   
 $= \frac{1}{2(a-1)}$

2)  $\frac{2(a+1)(a-1)}{2(a+1)}$   
 $1 \times (a-1)$

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2)  $\frac{b+3}{2b} + \frac{1}{2b} = \frac{2b^2+6b+1}{2b}$   
 LCD = 2b  
 $= \frac{2b^2+6b+1}{2b}$

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2)

$$\frac{3x + 15}{x^2 - 25} + \frac{x}{x + 5}$$

$$\frac{3x + 15}{(x + 5)(x - 5)} + \frac{x(x - 5)}{(x + 5)(x - 5)}$$

$$= \frac{3x + 15 + x^2 - 5x}{(x + 5)(x - 5)}$$

$$= \frac{x^2 - 2x + 15}{(x + 5)(x - 5)}$$

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4)

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

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

L.C.D

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

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

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

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5) Simplify

$$\left(x - \frac{1}{x}\right) \div \left(1 + \frac{1}{x-1}\right)$$

$$\frac{\left(\frac{x}{1} - \frac{1}{x}\right)}{\left(\frac{x-1}{x-1} + \frac{1}{x-1}\right)}$$

$$\frac{\frac{x^2 - 1}{x}}{\frac{x - 1 + 1}{x - 1}}$$

$$\frac{\frac{(x + 1)(x - 1)}{x}}{\frac{x}{x - 1}}$$

$$= \frac{(x + 1)(x - 1)}{x} \cdot \frac{x}{x - 1} = x + 1$$

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

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

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

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

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

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