Week 27 Algebra 1 Assignment:

Day 1: p. 494 #1-21 odd, 22-25, 28-32
Day 2: pp. 496-497 #1-19 odd, 23-26
Day 3: pp. 502-503 #1-9 odd, 11-22, 25-29
Day 4: p. 509 #1-14, 17-21
Day 5: pp. 512-513 #1-39 odd

Notes on Assignment:

Page 494:

General notes for this section: When adding rational expressions when the denominators are the same, follow these steps:

1. Add or subtract and place the result over the common denominator.
2. Factor the denominator and numerator of your answer.
3. Simplify the expression if possible.

Work to show:

#1-25: Write the problem putting the numerators together over the common denominator as dictated by the addition or subtraction. Simplify as needed.

#28-32: Answer as directed.

#17: Make sure that when you get your final answer, you factor the numerator and denominator and then cancel if possible.

#28-32: These expressions all need simplifying. Why?

Pages 496-497:

General notes for this section: When adding rational expressions, follow these steps:

1. Factor all denominators.
2. Find (and write down) the LCM (least common multiple) of all of the denominators.
3. Multiply each fraction times 1 in the form of $\frac{n}{n}$ in order to get the LCM in the denominator of each fraction.
4. Add or subtract and place the result over the common denominator.
5. Factor the denominator and numerator of your answer.
6. Simplify the expression if possible.

<u>Example</u>: $\dfrac{3y-x}{x^2-y^2}+\dfrac{2}{x+y}$

Factor denominators:

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

LCM = $(x-y)(x+y)$

Use the LCM to get a common denominator:

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

Simplify the numerators and put over the common denominator:

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

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

Factor and cancel if possible:

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

$$\frac{2}{(x-y)}$$

Work to show:

#1-19: Write the problem down, factoring the denominators as you do. Show the work as directed in the general notes for this section.

#22-25: Show work

#26: 5 steps

#13-19: You can leave answers in factored form.

#23: Clear the parentheses by putting the exponent on each factor of the product within the ( ). Then simplify.

#24: Write your border equation, graph it (dotted or solid) and then test to see which side to shade.

#26: This is a 5-step problem. Start with the angle that you know the least about.

Pages 502-503:

General notes for this section: When you subtract there is one simple step to remember: Change the subtraction into addition by changing – into + -. Then you work the problems the same as in the last lesson.

Example: $\frac{2}{x+3}-\frac{x+7}{x+3}$ must be changed to $\frac{2}{x+3}+\frac{-(x+7)}{x+3}$.

Remember to put the $x+7$ in ( ) since we need to subtract the entire quantity. It may be helpful to put a 1 in front of the ( ) so you have:

$$\frac{2}{x+3}+\frac{-1(x+7)}{x+3}$$

Now multiply to clear the ( ) in the numerator and continue the problem:

$$\frac{2-1x-7}{x+3}$$
$$\frac{-5-x}{x+3}$$

Work to show:

#1-19: Write the problem down, factoring the denominators as you do. Show the work as directed in the general notes for the past section and this section.

#25-29: Answers only

#12: When the denominators are the same except the subtraction order is reversed, multiply one of the fractions by $\frac{-1}{-1}$. So for this problem, first change the subtraction to addition by changing the – to a + and then putting a – up on the 10. Then multiply the 2nd fraction by $\frac{-1}{-1}$.

#16: Write the 2nd term (the x) over 1 so that all of the terms have denominators.

#17: Remember to put ( ) around the x+9 in the numerator right away.

#18: Remember to put ( ) around the binomials in the numerators right away.

#22: Remember to put ( ) around the trinomials in the numerators right away.

Page 509:

General notes for this section: There are 2 methods for working out this type of problem:

Method 1: Take the numerator, get a common denominator, and add/subtract to get a single fraction. Then take the denominator and do the same to get a single fraction. Then write the division as multiplication and solve.

Method 2: Find the LCM of all of the denominators within the complex fraction. Multiply the complex fraction by $\frac{LCM}{LCM}$ and simplify.

Example: Simplify $\dfrac{\frac{1}{x}+3}{\frac{5}{x^2}+\frac{2}{x}}$

Method 1: Simplify the numerator: $\frac{1}{x}+\frac{3}{1}\frac{(x)}{(x)}=\frac{1+3x}{x}$

Simplify the denominator: $\frac{5}{x^2}+\frac{2}{x}\cdot\frac{(x)}{(x)}=\frac{5+2x}{x^2}$

Put these back into the fraction to get: $\dfrac{\frac{1+3x}{x}}{\frac{5+2x}{x^2}}$

Change the division into multiplication and simplify:

$$\frac{1+3x}{x}\cdot\frac{x^2}{5+2x}=\frac{x(1+3x)}{5+2x}=\frac{x+3x^2}{5+2x}$$

Method 2: Find the LCM of the individual denominators: x^2

Multiply the complex fraction by $\frac{x^2}{x^2}$

$$\frac{\left(\frac{1}{x}+3\right)}{\left(\frac{5}{x^2}+\frac{2}{x}\right)}\cdot\frac{x^2}{x^2}$$

It may help to look at this problem like this:

$$\frac{\left(\frac{1}{x}+3\right)}{\left(\frac{5}{x^2}+\frac{2}{x}\right)}\cdot\frac{\left(\frac{x^2}{1}\right)}{\left(\frac{x^2}{1}\right)}$$

As we usually do when we multiply through to clear fractions, it is helpful to actually write the x^2 beside each term, like this:

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

Cancel and simplify: $\frac{x+3x^2}{5+2x}$

Work to show:

#1-14: Choose either method outlined above and show your work.
#17-21: Answer as directed.

#1-6: Write the complex fraction as division using the) symbol. Then change the division to multiplication by "flipping" the 2nd fraction.

#4: Write the denominator over 1 so that each fraction within the fraction has a denominator.

#7-14: You can use either of the methods above for these problems.

Pages 512-513:

Chapter Review – no notes.

Work to show:

All problems: Show work as you did throughout the assignments in this chapter.