Week 13 Algebra 2 Assignment:

Day 1: Chapter 6 test
Day 2: pp. 269-271 #1-23 odd, 25-34
Day 3: pp. 277-278 #1-15 odd, 17-26
Day 4: pp. 281-282 #1-10 all, 11-21 odd
Day 5: p. 271 #39-43, p. 278 #31-34, p. 282 #27-32, p. 285 #23-28

Notes on Assignment:

Chapter 6 Test:

What you will have to do for the test:

- Label systems as consistent or inconsistent
- Label systems as dependent or independent
- Solve systems by graphing
- Solve systems by substitution
- Solve systems by the addition method
- Solve a system of linear inequalities by graphing
- Solve a system of 3 equations and 3 variables.
- Solve a word problem involving 2-digit numbers
- Solve a word problem involving investments

Pages 269-271:

Work to show:

#1-9: Show these steps:

1. Factor the radicands (numbers under the radical symbol) into their prime factors.
2. Give each factor its own radical.
3. Change each radical into exponential form.
4. Simplify any of the exponential fractions that can be simplified.

#11-15: Follow these steps:

1. Make sure the exponents all have a common denominator.
2. Put the entire quantity under the same radical.
   - Leave the numerators of the exponents on the numbers.
   - Take the denominators off, as that number becomes the index of the radical.

#17-34: Show work needed to simplify.
#39-43: Show work needed to simplify.

Notes for this section:

- When writing a radical expression as an exponential expression, the index of the radical becomes the denominator of the exponent.
- When writing an exponential expression as a radical expression, the denominator of the exponent becomes the index of the radical.
- The rules that have been previously learned for exponents apply to fractional exponents as well.

#3: Factor the radicand: $\sqrt[3]{2^2 \cdot 3^1 \cdot a^2 \cdot b^1}$.

Give each factor its own radical: $\sqrt[3]{2^2} \cdot \sqrt[3]{3^1} \cdot \sqrt[3]{a^2} \cdot \sqrt[3]{b^1}$

Change to exponential form: $2^{\frac{2}{3}} \cdot 3^{\frac{1}{3}} \cdot a^{\frac{2}{3}} \cdot b^{\frac{1}{3}}$.

#17: Write this as a fraction and use the rule for dividing when the bases are the same.

#21-23: Write in exponential form and simplify.

#25-34: Some of these you can just simplify as radicals as we have done in the past. Others might be easier if you change the radicals to exponential form first. Or, you can change part of the product to exponential form and leave part as a radical.

Pages 277-278:

Work to show:

#1-26: Use the branching method.

#31-34: Solve each system and show work associated with the method chosen.

#1-15: Use the branching method of simplifying.

- For the number factors, look for buddies and perfect squares.
- When you have a variable raised to an exponent larger than the index, break it into 2 radicals so that the exponent on the variable in one radical is less than the index and the exponent on the variable in the other radical is a multiple of the index. We usually don't write it, but what we are doing at this point to simplify is to write the radical with the exponent that is a multiple in exponential form. Then simplify.

For example: (without the actual branches drawn)

$$\sqrt[3]{x^{23}}$$

$$\sqrt[3]{x^{21}} \cdot \sqrt[3]{x^2}$$

$$x^{\frac{21}{3}} \cdot \sqrt[3]{x^2}$$

$$x^7 \cdot \sqrt[3]{x^2}$$

Note: Most of the problems are square roots. That means you will have to split off one variable to make the other have an even exponent.

#17-26: General notes:

- When the root is an even root:
  - What is under the radical must be positive
    - If it is negative, we get a complex solution.
  - What comes out of the radical must be positive

****If what comes out of the radical can *possibly* be negative, we put absolute value brackets around it to ensure that it is positive.**

- When the root is an odd root:
  - What is under the radical can be positive or negative
  - What comes out of the radical will match the sign of what was under the radical.

#17: This simplifies as follows:

$$\sqrt[4]{x^{12}y^4z^5}$$
$$\sqrt[4]{x^{12}}\cdot\sqrt[4]{y^4}\cdot\sqrt[4]{z^5}$$
$$x^3\cdot y\cdot\sqrt[4]{z^4}\cdot\sqrt[4]{z^1}$$
$$x^3\cdot y\cdot z\cdot\sqrt[4]{z}$$

To make sure that what comes out of this even root is positive, we need absolute value brackets around the terms that came out with odd exponents, because they might be negative.

$$x^3\cdot y\cdot z\cdot\sqrt[4]{z}$$
$$\left|x^3\right|\cdot|y|\cdot|z|\cdot\sqrt[4]{z}$$
$$\left|x^3yz\right|\sqrt[4]{z}$$

You can either leave the individual absolute value brackets, or put them together inside one set of brackets.

Pages 281-282:

Work to show:

#1-10: Write the problem, draw "walls", simplify each radical, & combine like terms.
#11-13: Show work
#15-19: Write the problem, draw "walls", simplify each radical, & combine like terms.
#27-32: Show work needed to find line equations

Notes for this section: When you add radicals, it is similar to adding like terms. In order to add radicals, they must be like radicals. You will have to simplify each term individually and then combine any like radicals.

#1: Think "3 apples – 5 apples".

#2: Think "7 bananas + 1 orange + 3 bananas". Only add the like radicals.
#3: You will have to simplify each of these 3 radicals and then see if you can add/subtract them.

#7: You can put a variable and radical together in your thinking of apples and bananas. You will need to do this for this problem.

For example, for $3x\sqrt{5y}+7x\sqrt{5y}$ you can think "3 apples + 7 apples"
where "apples" is $x\sqrt{5y}$
(a combination of a variable and radical)

#11: Think of 7^{36} as your "apples". Then you have "1 apple + 1 banana – 2apples". Also, since 8 can be written as 2^3 so simplify the expression that has the 8 in it.

#13: This is a bit tricky. You need to think backwards. The 2nd term, 6^{x+1}, came from $6^x \cdot 6^1$. Think of this as $6 \cdot 6^x$ and then think of the 6^x as your "bananas".

#21: Write the 8 as 2^3 first.

Pages 285:

Work to show:

#23-28: Show each step of factoring.