Week 21 Algebra 1 Assignment:

Day 1: p. 399 #1-19 odd, 21-28, 32-35
Day 2: pp. 402-403 #1-18, 21-25
Day 3: pp. 405-406 #1-22
Day 4: pp. 410-411 #1-13 odd, 15-24, 27-31

Notes on Assignment:

Page 399:

Work to show:
#All problems: Show any work needed.

#1-5: Remember that once you change the radical to an exponent, you can use all of the rules for exponents that you already know. Like for #3, after you write that quantity as $(\quad)^{1/3}$, you can put that exponent on both the 2 and the x^2.

#7-9: Change the fractional exponents into radicals and then multiply the radicals together under a single radical.

#11: Think of the perfect squares. Which 2 perfect squares does 18 fall between?

#13: You must think of the perfect cubes for this one.

#21-28: Your calculator should one of the following buttons:

- [^] This is the exponent button.
  - To find $\sqrt[7]{3}$ (which is the same as $3^{1/7}$), you would type in 3 [^] (1/7) [=]. (Make sure to include the ( ) around the 1/7.)
- [y^x] This is the also an exponent button.
  - To find $\sqrt[7]{3}$ (which is the same as $3^{1/7}$), you would type in 3 [y^x] (1/7) [=]. (Make sure to include the ( ) around the 1/7.)
- [$\sqrt[x]{\ }$] This is a radical button.
  - To find $\sqrt[7]{3}$ you would type in 7 [$\sqrt[x]{\ }$] 3 [=].

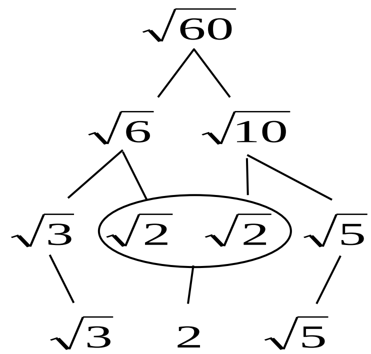
#33: Look for the GCF first!

#34: What number(s) do you square to get 25?

#35: What number(s) do you square to get 196?

Pages 402-403:

General notes for this section: When you simplify radicals, please use the branching method that was shown in class. Below is a simple example:

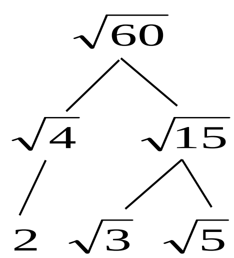


$$2\sqrt{15}$$

Simplify all radicals, and then for your final answer, multiply the radicals together and the numbers together.

Note: Whenever you multiply identical radicals together, we call them "buddies." Their product is just the number that is underneath (see the buddies in the example).

Here is the same example done another way:



$$2\sqrt{15}$$

(If you can break the number down to include a perfect square, it will shorten the problem.)

Work to show:

#1-18: Write the radical and show the branching method to simplify.
#21-25: Show work as needed.

#3: When breaking down a cubed root, you must either look to get 3 buddies, or break it down so that you have a perfect cube under your radical.

#4: This is a large number, but at least it is even, so you can break it down to 2 times something.

#12: See note for #4.

#13-18: When simplifying radicals with exponents underneath like these problems, remember that whenever the index matches the exponent, they will undo each other.

Examples:

$$\sqrt{x^2} = x$$
$$\sqrt[3]{x^3} = x$$
$$\sqrt[4]{x^4} = x$$
$$etc.$$

So if you can break your radicals down strategically into radicals like these, you can get an x out. (Refer to your handout for more on this.)

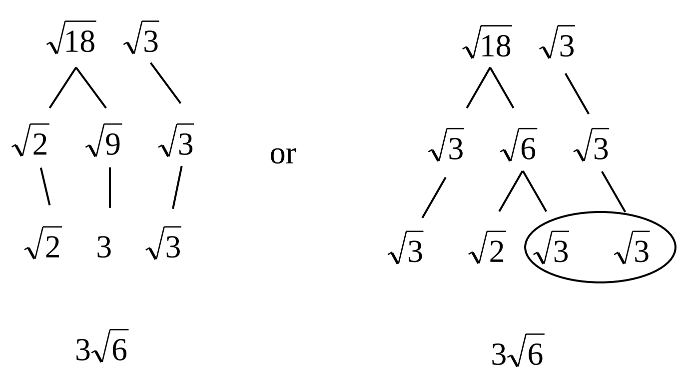
#21: Remember that when you multiply or divide both sides of an inequality by a negative number, you must reverse the inequality.

#22: Make a table for this. This is an absolute value problem.

Pages 405-406:

General notes for this section: For multiplying radicals, you have a choice: either multiply and then simplify, or simplify and then multiply. Usually you will want to simplify all radicals being multiplied and then put together buddies, etc. If you see some perfect squares that will show up if you multiply first, then go ahead and do that instead.

Example:



Work to show:

#All problems: Either simplify, then multiply, or multiply, then simplify, but show the resulting branching needed to finish the problem.

#13: The first term is a perfect 5^{th}, so it simplifies to 2. The second term should be broken into 32 times 2, since 32 is a perfect 5^{th}.

#14: Break these numbers down until you can get sets of 3 buddies.

#18-22: When there are numbers and variables like in these types of problems, what I usually suggest is that you multiply them together under one radical and then break them down. This way the variables are "gathered" together and easier to simplify.

Pages 410-411:

General notes for this section: Radicals are never allowed to stay in denominators. To rationalize the denominator, you have 3 choices:

1. Automatically multiply by 1 in the form of $\frac{buddy}{buddy}$ using the buddy of radical in the denominator.

   Example: $\frac{5}{\sqrt{12}}\cdot\frac{\sqrt{12}}{\sqrt{12}}=\frac{5\sqrt{12}}{12}=\frac{5(2\sqrt{3})}{12}=\frac{10\sqrt{3}}{12}=\frac{5\sqrt{3}}{6}$

2. Simplify the radical in the denominator first (if possible) and then multiply by 1 in the form of $\frac{buddy}{buddy}$ using the buddy of radical in the denominator.

   Example: $\frac{5}{\sqrt{12}}=\frac{5}{2\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=\frac{5\sqrt{3}}{2\cdot 3}=\frac{5\sqrt{3}}{6}$

3. See if there is a radical that you could multiply the radical in the denominator by to get a perfect square under the radical. Multiply by 1 using that radical over itself.

   Example: $\frac{5}{\sqrt{12}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=\frac{5\sqrt{3}}{\sqrt{36}}=\frac{5\sqrt{3}}{6}$

Note: Before rationalizing a denominator, always take a look at the fraction to see if it can be simplified first. A fraction like $\frac{\sqrt{14}}{\sqrt{21}}$ can be simplified to $\sqrt{\frac{14}{21}} = \sqrt{\frac{2}{3}} = \frac{\sqrt{2}}{\sqrt{3}}$ first. Then rationalize the denominator. Use the rules of radicals to do this.

Work to show:

#1-18: Write the problem and show work for rationalizing denominators

#19-24: Write the problem down as a fraction, then show work for rationalizing the denominator.

#27-31: Show any work needed.

#7: Put these together under a single radical first and simplify.

#9: Write this in fractional form.

#15-18: Put the fractions under a single radical and simplify first. If there is still a denominator under a radical, then you will either need to try to get a perfect cube on the bottom under the radical, or you will need 3 buddies on the bottom.

#19-24: Write these in fractional form, put the radicals under a single radical and simplify first. If there is still a denominator under a radical, then rationalize the denominator.

#28: Use the slope and y-intercept.

#29: Solve and graph each inequality on a number line. Remember that the V is the word “or” which means “union.”

#30: Every term of one polynomial must be multiplied times every term of the other polynomial. Then combine like terms.

#31: What property says you can change the *order* in which you multiply?