Night of Chapter 7 Test Homework- Early Review for the final.

We will review 2 ideas that will be on the final, rules of exponents and working with fractional expressions.

Exponents:

x^a means that there are *a* *x*'s being multiplied together. Therefore, the rule $x^a x^b = x^{a+b}$ makes sense since we now have *a* + *b* *x*'s being multiplied together. Using the same logic, $\left(x^a\right)^b = x^{ab}$ since having *b* copies of x^a gives $a \times b$ *x*'s in all. W can use this to get $\left(x^a y^b\right)^c = x^{ac} y^{bc}$ since we have *c* copies of both x^a and y^b. $x^0 = 1$ since x^0 is a number we can ignore when we are multiplying and this number is one. ($x^a x^0 = x^{a+0} = x^a$). Since $x^a x^{-a} = x^{a-a} = x^0 = 1$, x^{-a} must be the reciprocal of x^a so $x^{-a} = \frac{1}{x^a}$. This leads to the rule $\frac{x^a}{x^b} = x^a x^{-b} = x^{a-b}$. $\left(x^{\frac{1}{a}}\right)^a = x^{\frac{a}{a}} = x^1 = x = \left(\sqrt[a]{x}\right)^a$ so $x^{\frac{1}{a}} = \sqrt[a]{x}$. We also have $x^{\frac{a}{b}} = \sqrt[b]{x^a} = \left(\sqrt[b]{x}\right)^a$.

You can read P3 if you want more info.

1. Use these rules to do p. 59 #'s 18, 21, 25, 28, 30, 32, 34, 35, 39 and 40 (Answers are in the back of the book)

Rational Expressions:

These are fractions where the numerator or denominator or both are polynomials. When you work with them, they follow the same rules as numerical fractions. A key algebraic idea is to remember that adding and subtracting does not play nice with multiplying and dividing so you want to factor expressions and work with the larger pieces and not the individual terms (For example, $x^2 - x - 6$ is $(x-3)(x+2)$.

Look on page 55 to see some common errors that arise from this add/ sub versus mult/divide issue) To add or subtract, you must find a common denominator first. (p. 51 example 6). To multiply, you multiply the numerator and t multiply the denominators. It is a good idea to cancel first to keep the expressions manageable. (p. 50 example 4). Dividing is just multiplying by the reciprocal (p. 51 example 5).

Finally, a compound fraction (sometimes called a complex fraction) is just fractions inside a fraction. You can just simplify the numerator and denominator separately into you get it into a form where you can go from dividing to multiplying by a fraction. You can also multiply the numerator and denominator by the same expression which is chosen to cancel all of the denominators present (notice that you are multiplying by "1" in disguise). (p. 52 example 7 shows both of these two approaches)

2. Do p. 59- 60 #'s 78, 79, 81, 83, 85, 8, 88