Review: *Unit 4* – Exponential Functions

4.2 Working with Integer Exponents

We reviewed the "parts" of a power (base and exponent) and the various

EXPONENT (OR POWER) LAWS

We also learned that a negative exponent gives the reciprocal of the base.

e.g. $\left(\frac{2}{3}\right)^{-3} = \left(\frac{3}{2}\right)^{3} = \frac{3^3}{2^3} = \frac{27}{8}$

4.3 Rational Exponents

We learned how to deal with **fractional** exponents. For example, in the power

$$(16)^{\frac{3}{4}}$$

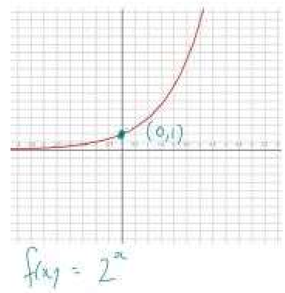
the **numerator** of the exponent acts as a "normal" (integer) exponent, while the **denominator** acts as a "root".

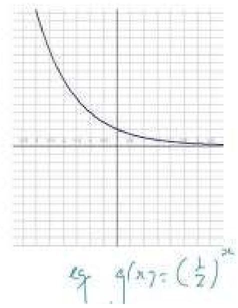
e.g. $(16)^{\frac{3}{4}} = \left(16^{\frac{1}{4}}\right)^{3} = \left(\sqrt[4]{16}\right)^{3} = (2)^{3} = 8$

4.4 Simplifying Algebraic Expressions Involving Exponents

In this section we used what we learned about the Exponent Rules to simply lots and lots of expressions using algebra. It was so much fun, it's ridiculous! We often required that the final, simplified expression, be written using only positive exponents.

4.5 & 4.6 Properties and Transformations of Exponential Functions





We learned the difference between Exponential Growth and Exponential Decay from both a geometric and an algebraic point of view.

We learned the general form of an Exponential Function

$$f(x) = a \cdot b^{k(x-d)} + c$$

and sketched a few exponential functions.

4.7 Applications of Exponential Functions

Finally we solved a number of "real world" problems which involved exponential growth or decay. Remember the basic algebraic "forms" for growth and decay:

Growth: $P(t) = P_0(1 + r)^t$, where A_0 is the initial "amount", and r is the growth rate (remember to convert percentages to decimals!)

Decay: $A(t) = A_0(1 - r)^t$

STUDY WELL!!!

Suggested Practice Problems From the Textbook

Exponential Functions: Pg. 267 – 269 #2, 4, 5, 8, 11, 13 - 17