Name: _____ Period: _____ Date: _____

Zero and Negative Exponent Guide Notes

REVIEW: Properties of Power

PROPERTIES	EXAMPLE
$i. a^n \cdot a^m = a^{m+n}$	
$ii. \frac{a^m}{a^n} = a^{m-n}, a \neq 0 \; and \; m > n$	
$iii. (a^m)^n = a^{mn}$	
$iv. (ab)^n = a^n b^n$	
$v. \left[\frac{a}{b}\right]^n = \frac{a^n}{b^n}$	

Definition for Negative and Zero Exponent

$a^0 = 1, a \neq 0$

$a^{-n} = \frac{1}{a^n} for \; any \; integer, a \neq 0$

Sample Problem 1: simplify the following expression.

1. $-4^0 - 2^2 =$

2. $-2x^0 =$

3. $-2^{-4} - \frac{1}{2x^0} =$

4. $(-x^0 - 1^{-1})^{-1} =$

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Sample Problem 2: Evaluate the following using properties of powers.

1. $\left(\frac{-5}{4}\right)^{-3} =$

2. $\left(\frac{2x}{3y^4}\right)^{-2} =$

3. $\left[\frac{-(2x)^0}{2x^0}\right]^{-3} =$

4. $(-2x^{-2})^{-3} =$

Sample 3: Simplify the following without negative exponent.

1. $\frac{2^{-1}-3^{-1}}{2^{-1}+3^{-1}} =$

2. $-2^{-1} - (-2^2)^0 =$

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3. $(x^{-1} - y^{-1})(x - y)^{-1} =$

4. $\frac{(-4^{-1}-2^{-1})^{-1}}{6^{-1}-2^{-1}} =$