

Unit 1: Algebra Skills

Topic: Simplifying Exponential Expressions

Objective: SWBAT simplify expressions that include positive, negative, and rational exponents.

Warm Up #2:

Explain in your own words (☺BE SPECIFIC) how you would simplify the following expressions and then find two representations for the answer.

$$\frac{x(12x^2 - 2) - (4x^2 + 7)(x + 1)}{x^2}$$

Many times in mathematics we have to be able to simplify or rewrite an expression involving negative and/or fractional exponents in order to solve a given problem.

FLASHBACK : Algebra I and II

Let's Review the Rules of Exponents that we should already know.

If you have:	Example(s)	Rule
Multiplication	$y^5 \cdot y^7 =$	
Division	$\frac{x^{13}y^6}{x^4y^{-2}} =$	
Raising a power to a power	$(x^3)^4 =$	
Zero Power	$(24x^2yz^{15})^0 =$	
Negative Exponents	$x^{-7} =$ $\frac{2}{y^{-4}} =$	
Parentheses w/ Exponents	$(-2x^3y)^5 =$	
Rational Exponents	$\sqrt[4]{2^3} =$	

You may have to use one or more laws of exponents to simplify an expression.

Problem Set #2: Simplify each of the following expressions using the rules of exponents.

1) $\sqrt[3]{x} (5x^2 + 2\sqrt{x})$

2) $(-5x^{3/4} y^{1/2})(3x^{-5/3} y^{3/2})$

3) $\frac{18y^{4/3} z^{-1/3}}{24y^{-2/3} z}$

4) $(-2x^{3/4} y^{1/2})(4x^{1/4} y^{-1})$

5) $\frac{(2x+3)^2}{\sqrt{x}}$

6) $\left(\frac{3m^{1/6} n^{1/3}}{4n^{-2/3}}\right)^2$

7) $[(3x^2 y^{-2})^{-1}]^{-1}$

8) $\frac{4x^2(x-5)^3}{\sqrt{x-5}}$

9) $\left(-\frac{4}{y}\right)^2 \left(\frac{3}{y}\right)^3$

10) $\left(\frac{4x^{-2}y^6}{3y}\right)^{-1}$

11) $(5\sqrt{x} + 1)(2 - \sqrt[3]{x})$

12) $\frac{(3x^{-5}y^2)^0}{(4x^{-3}y^2)^{-2}}$

13) $\frac{(4-x)^2}{\frac{2}{x}}$

14) $(5x^2z^6)^3(5x^2z^6)^{-3}$

15) $\left(\frac{2^{-2}}{a^{-2}}\right) \left(\frac{2}{a}\right)^3$

16) $\frac{(6x^3y^{-2})^{-2}(3x^4y^{-5})^2}{(2x^4y^2)^{-3}}$

