

**Exponent Properties (2.1)****Remember your rules!!!**

- $a^m \cdot a^n = a^{m+n}$
- $(a^m)^n = a^{mn}$
- $(ab)^m = a^m b^m$
- $a^{-m} = \frac{1}{a^m}$
- $\frac{a^m}{a^n} = a^{m-n}$
- $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$
- $a^0 = 1$

**Basic Exponent Rules:** Simplify and write all answers with positive exponents.

- 1)  $(-2)^4$       2)  $(-9)^0$       3)  $-9^0$
- 4)  $3^2 \cdot 3^3$       5)  $\frac{3^8}{3^4}$       6)  $x^{-5} \cdot x^{10}$
- 7)  $(x^{-5})^3$       8)  $2^{-3} \cdot 2$

**Exponential Expressions:** Simplify and write all answers with positive exponents.

9)  $(-3x^4y)(11x^5y^{14}) =$

10)  $\left(\frac{-56x^4y^9}{14x^7y^{-4}}\right)^3 =$

11)  $\frac{1}{(2x^2)^{-4}} =$

12)  $\left(\frac{3x^2y^4}{4xy^5}\right)^{-2} =$

13)  $\frac{15a^{-3}b^{-4}c^{-3}}{18a^2b^6c^{-5}} =$

14)  $\left(\frac{18x^{-3}y^{-7}z^4}{9x^{-5}y^{-3}z^{-3}}\right)^{-4} =$

**Evaluating with Rational Exponents:** Evaluate without the use of a calculator.

15)  $27^{4/3} =$

16)  $(-32)^{4/5} =$

**Radical and Rational Exponent Expressions:** Simplify.

17)  $(16x^8y^{12})^{1/4} =$

18)  $\sqrt[3]{-48x^5y^9}$

19)  $\left(3x^{2/3}\right)\left(4x^{3/4}\right) =$

20)  $\frac{72x^{3/4}}{9x^{1/3}} =$