

## Exponent Rules Review Worksheet

Product Rule: When multiplying monomials that have the same base, add the exponents.

$$x^m \cdot x^n = x^{m+n}$$

Example 1:  $x \cdot x^3 \cdot x^4 = x^{1+3+4} = x^8$

Example 2:  $(2x^2y)(-3x^3y^4) = 2 \cdot (-3) \cdot x^2 \cdot x^3 \cdot y \cdot y^4 = -6x^5y^5$

Power Rule: When raising monomials to powers, multiply the exponents.

$$(x^m)^n = x^{m \cdot n}$$

Example 3:  $(x^2y^3)^4 = x^{2 \cdot 4} y^{3 \cdot 4} = x^8y^{12}$

Example 4:  $(2x^3yz^2)^3 = 2^3 x^{3 \cdot 3} y^3 z^{2 \cdot 3} = 8x^9y^3z^6$

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**Simplify each of the following.**

1)  $a \cdot a^2 \cdot a^3$

2)  $(2a^2b)(4ab^2)$

3)  $(6x^2)(-3x^5)$

4)  $b^3 \cdot b^4 \cdot b^7 \cdot b$

5)  $(3x^3)(3x^4)(-3x^2)$

6)  $(2x^2y^3)^2$

7)  $(5x^2y^4)^3$

8)  $(6x^4y^6)^3$

9)  $(4x^3y^3)^3$

10)  $(7xy)^2$