

Study Guide

Multiplying Monomials

When you multiply monomials, you use the following rules for all numbers a and b and any integers m , n , and p .

	Rule	Example
Product of Powers	For any number a , and all integers m and n , $a^m \cdot a^n = a^{m+n}$.	$a^2 \cdot a^6 = a^{2+6}$ $= a^8$
Power of a Power	For any number a , and all integers m and n , $(a^m)^n = a^{mn}$.	$(x^2)^6 = x^{2 \cdot 6}$ $= x^{12}$
Power of a Product	For all numbers a and b , and any integer m , $(ab)^m = a^m b^m$.	$(pq)^4 = p^4 q^4$
Power of a Monomial	For all numbers a and b , and all integers m , n , and p , $(a^m b^n)^p = a^{mp} b^{np}$.	$(s^4 t)^3 = (s^4 t^1)^3$ $= s^{4 \cdot 3} t^{1 \cdot 3}$ $= s^{12} t^3$

Simplify.

- $[n^5(n^2)]$
- $b(b^4)$
- $(-7x^2)(x^4)$
- $(2a^2)(8a)$
- $(rs)(rs^3)(s^2)$
- $(x^2y)(4xy^3)$
- $\frac{1}{3}(2a^3b)(6b^3)$
- $(-5nx)(4x^2)(n^4)$
- $(n^3)^5$
- $(a^4)^6$
- $-3(ab^4)^3$
- $(-3ab^4)^3$
- $(4x^2b)^3$
- $(4x)^2(b^3)$
- $(-2m^5n^6)^2$
- $-2m^5(n^6)^2$
- $2(3x)^3$
- $-3(2x)^5$
- $(-2n^6y^5)(-6n^3y^2)(ny)^3$
- $(-3a^3n^4)(-3a^3n)^4$