1.4 Exponent Laws: Power of a Power

(chapter 3.3 in text)

Learning Goal: you will derive and apply a rule for taking the power of a power.

Exponent Laws

The third exponent law is called the Power of a Power Law. We use this law when we have a power raised to another power.

Power of a Power	Expanded Form	Single Power
$(2^2)^3$	$(2^2)\times(2^2)\times(2^2)$ $=(2\times2)\times(2\times2)\times(2\times2)$	2^6
$(5^3)^4$		
$(2x^2y)^3$		

A power of a power can be written as a single power by multiplying the exponents.

Ex. Simplify, (or write as a single power)

a) $\left(3^2\right)^4$ b) $\left[(-2)^3\right]^4$ c) $\left[\left(\frac{2}{3}\right)^2\right]^2$

d) $\left(0.2^3\right)^2$ e) $y^3 \times y^5$ f) $\frac{6p^7}{3p^3}$

g) $a^2b^3\left(a^6b^4\right)$ h) $\frac{-2uv^3 \times 8u^2v^2}{\left(4uv^2\right)^2}$

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