

Foundations of Math & Pre-Calculus 10
Lesson 4.6 ~ Applying the Exponent Laws

Exponent Laws

- Product of powers: $a^m \cdot a^n = a^{m+n}$
- Quotient of powers: $a^m \div a^n = a^{m-n}, a \neq 0$
- Power of a power: $(a^m)^n = a^{mn}$
- Power of a product: $(ab)^m = a^m b^m$
- Power of a quotient: $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}, b \neq 0$
- Negative exponents: $a^{-n} = \frac{1}{a^n}$

Examples: Simplify.

a) $0.8^2 \cdot 0.8^{-7}$

b) $\frac{(1.5^{-3})^{-5}}{1.5^{-5}}$

c) $\left[\left(-\frac{4}{5} \right)^2 \right]^{-3} \div \left[\left(-\frac{4}{5} \right)^4 \right]^{-5}$

$$d) m^4 n^{-2} \cdot m^2 n^3$$

$$e) \frac{6x^4 y^{-3}}{14x^2}$$

$$f) \left(\frac{5a^4 b^2}{ab^0 c^2} \right)^{-3}$$

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