Algebra I

Notes Section 7.2

Apply Exponent Properties Involving Quotients

Big Ideas

1. How to use the Quotient of Powers Property.
2. How to use the Power of a Quotient Property.

PROPERTIES

I. Quotient of Powers _____

II. Power of a Quotient _____

EXAMPLE 1 Simplify.

a) $\frac{8^{10}}{8^4}$ _____

b) $\frac{(-3)^9}{(-3)^3}$ _____

c) $\frac{5^4 \cdot 5^8}{5^7}$ _____

d) $\frac{1}{x^4} \cdot x^6$ _____

EXAMPLE 2 Simplify.

a) $\left(\frac{x}{y}\right)^3$ _____

b) $\left(\frac{-7}{x}\right)^2$ _____

EXAMPLE 3 Simplify.

a) $\left(\frac{4x^2}{5y}\right)^3$ _____

b) $\frac{a^2}{b}^5 \cdot \frac{1}{2a^2}$ _____

c) $\left(\frac{x^2}{4y}\right)^2$ _____

d) $\left(\frac{2s}{3t}\right)^3 \cdot \frac{t^5}{16}$ _____

EXAMPLE 4 The luminosity (in watts) of a star is the total amount of energy emitted from the star per unit of time. The order of magnitude of the luminosity of the sum is 10^{26} watts. The star Canopus is one of the brightest stars in the sky. The order of magnitude of the luminosity of Canopus is 10^{30} watts. How many times more luminous is Canopus than the sun?