

Simplifying Expressions involving Exponents

Example 1: Simplify, then evaluate for $x = 3$ and $y = -2$.

$$\begin{aligned} \text{a. } & (2x^3)(3x^{-2}) \\ & = 6x \\ & = 6(3) \\ & = 18 \end{aligned}$$

$$\begin{aligned} \text{b. } & x^4y^2 \div x^2y^{-1} \\ & = x^2y^3 \\ & = (3)^2(-2)^3 \\ & = -72 \end{aligned}$$

$$\begin{aligned} \text{c. } & \frac{-3xy^3 \cdot 4x^2y^4}{6x^3y^5} \\ & = \frac{-12x^3y^7}{6x^3y^5} \\ & = -2x^0y^2 \\ & = -2(1)(-2)^2 \\ & = (-2)^3 \\ & = -8 \end{aligned}$$

Example 2: The formula for the volume of a cube is $V = s^3$.

a. Re-arrange the formula to solve for s .

$$\begin{aligned} V & = s^3 \\ \sqrt[3]{V} & = \sqrt[3]{s^3} \\ V^{1/3} & = (s^3)^{1/3} \\ V^{1/3} & = s \end{aligned}$$

b. A certain cube has a volume of 35cm^3 . Determine the side length of the cube, to two decimal places.

$$\begin{aligned} s & = V^{1/3} \\ s & = 35^{1/3} \\ s & = 3.27 \end{aligned}$$

Practice: pg. 61 #1ef, 2bdfgh, 15, 16