

## Lesson 2-7

## Example 1

Evaluate each expression. Let  $x = 5$  and  $y = -2$ .

a.  $x^3$

b.  $y^2$

c.  $xy^3$

## Solution

$$\begin{aligned} \text{a. } x^3 &= 5^3 \\ &= 5 \cdot 5 \cdot 5 \\ &= 125 \end{aligned}$$

$$\begin{aligned} \text{b. } y^2 &= (-2)^2 \\ &= -2 \cdot -2 \\ &= 4 \end{aligned}$$

$$\begin{aligned} \text{c. } xy^3 &= (5)(-2)^3 \\ &= (5)(-2)(-2)(-2) \\ &= (5)(-8) \\ &= -40 \end{aligned}$$

## Example 2

Simplify.

a.  $b^4 \cdot b^3$

b.  $(3x^3)^2$

c.  $(a^2b)^3$

## Solution

$$\begin{aligned} \text{a. } b^4 \cdot b^3 &= b^{4+3} \\ &= b^7 \end{aligned}$$

$$\begin{aligned} \text{b. } (3x^3)^2 &= (3^2)(x^3)^2 \\ &= 9x^{3 \cdot 2} \\ &= 9x^6 \end{aligned}$$

$$\begin{aligned} \text{c. } (a^2b)^3 &= a^{2 \cdot 3}b^{1 \cdot 3} \\ &= a^6b^3 \end{aligned}$$

## Example 3

Simplify.

a.  $\frac{w^6}{w^3}, w \neq 0$

b.  $\left(\frac{g}{8}\right)^2$

c.  $\left(\frac{n^5}{n^4}\right)^3, n \neq 0$

## Solution

$$\begin{aligned} \text{a. } \frac{w^6}{w^3} &= w^{6-3} \\ &= w^3 \end{aligned}$$

$$\begin{aligned} \text{b. } \left(\frac{g}{8}\right)^2 &= \frac{g^2}{8^2} \\ &= \frac{g^2}{64} \end{aligned}$$

$$\begin{aligned} \text{c. } \left(\frac{n^5}{n^4}\right)^3 &= (n^{5-4})^3 \\ &= (n^1)^3 \\ &= n^3 \end{aligned}$$