Unit 2 (chp 5) Powers and Roots

Section 5.1 Powers with Integers and Rational- Number Bases (p. 191-194)

Recall powers with positive bases:

10^3 ← exponent

base

We say : "10 to the 3" or "10 to the power of 3"

The **base** is 3. The base is the number repeatedly multiplied
The **exponenet** is 4. The exponent is the number of times the base is multiplied.

We write as: $\underbrace{10^3}_{power\ form} = \underbrace{10 \times 10 \times 10}_{expanded\ form} = \underbrace{1000}_{standard\ form}$

EX. 1 Evaluate each power:

(a) $5^2 = 5 \times 5 = 25$

(b) $(-3)^4 = (-3) \times (-3) \times (-3) \times (-3) = 81$

(c) $-(3)^4 = -(3 \times 3 \times 3 \times 3) = -(81) = -81$

(d) $\left(-\dfrac{5}{4}\right)^2 = \left(-\dfrac{5}{4}\right)\left(-\dfrac{5}{4}\right) = \left(\dfrac{25}{16}\right)$ ***or*** $\left(-\dfrac{5}{4}\right)^2 = \dfrac{(-5)^2}{(4)^2} = \dfrac{25}{4}$

(e) $\left(\dfrac{1}{2}\right)^3 = \left(\dfrac{1}{2}\right)\left(\dfrac{1}{2}\right)\left(\dfrac{1}{2}\right) = \dfrac{1}{8}$

EX. 2 Evaluate:

(a) $(-2)^3 + (3)^2 = (-2) \times (-2) \times (-2) + (3) \times (3)$
$= -8 + 9$
$= 1$

Always remember
order of operations!

(b) $3(-4)^2 - 7^2 = 3[(-4) \times (-4)] - (7 \times 7)$
$= 3[16] - 49$
$= 48 - 49$
$= -1$