Section 1.4: Exponents

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$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 2^5$

exponential form is another way to write repeated multiplication

2^5 ← the 5 is called the exponent

↑ the 2 is called the base

examples:

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 2^5 = 32$

$(-3) \cdot (-3) \cdot (-3) \cdot (-3) = (-3)^4 = 81$

WARNING!

$(-2)^3 = (-2) \cdot (-2) \cdot (-2) = -8$

$(-2)^4 = (-2)(-2)(-2)(-2) = 16$

$-2^4 = -1 \cdot 2^4 = -16$

↑ exponentiation is done first

be careful! with brackets

sign rule: if the base of the exponent is negative and

- the exponent is even, the result is positive

$$(-2)^4 = (-2)(-2)(-2)(-2) = +16$$

if the base of the exponent is negative and the exponent is odd the result is negative

$$(-2)^3 = (-2)(-2)(-2) = -8$$

examples:

$$(-1)^6 = 1$$

$$(-5)^2 = 25$$

$$(-3)^3 = -27$$

The sign rule does not apply to -4^2. Why?

the base is 4 (positive 4)

this is $-4^2 = -1 \cdot 4^2$