lulumath

# Evaluating Negative Bases with Integer Exponents

Video Notes

Video Link

# Evaluating Negative Bases with Integer Exponents

Background Information:

- Multiplication of Integers

Evaluate $x^2$ when:

$x = 3$

$3^2 = 3 \cdot 3 = 9$

$(3)^2 = 9$

*Brackets/parentheses are not necessary here, but are totally fine.

$x = -2$

$(-2)^2 = -2 \cdot -2 = (-2)(-2) = 4$

You **must** put brackets/parentheses around a negative value that is raised to any power!

Different from

$-2^2$

$-1(2)^2$

$-4$

Evaluate $x^3$ when:

$x = 3$

optional → $3^3 = 3 \cdot 3 \cdot 3 = 27$

$(3)^3$

$x = -2$

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

$4 \cdot -2$

$-2^3 = -8$

wrong notation

Evaluate $x^4$ when:

$x = 3$

optional → $(3)^4 =$

$3^4 = 3 \cdot 3 \cdot 3 \cdot 3 = 81$

$9 \cdot 9$

$x = -2$

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

$4 \cdot -2 \cdot -2$

$-8 \cdot -2$

$-2 \cdot -2 \cdot -2 \cdot -2$

$4 \cdot 4 = 16$

Evaluate $x^5$ when:

$x = 3$

optional → $(3)^5 =$

$3^5 = 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 = 243$

$9 \cdot 3 \cdot 3 \cdot 3$

$27 \cdot 3 \cdot 3$

$81 \cdot 3$

$243$

$x = -2$

$(-2)^5 = -2 \cdot -2 \cdot -2 \cdot -2 \cdot -2 = -32$

$4 \cdot -2 \cdot -2 \cdot -2$

$-8 \cdot -2 \cdot -2$

$16 \cdot -2$

$-32$

① Any negative bases must have brackets/parentheses.

② A negative base raised to:
- an even exponent will be positive
- an odd exponent will be negative.

because groups of 2 negatives become positive.