

2.3 Order of Operations with Powers

Review

1. a) $10^0 = 1$ b) $3^0 = 1$ c) $(-5)^0 = 1$ d) $-5^0 = -1$
2. $10^0 = 1$
 $10^1 = 10$
 $\rightarrow 10^2 = 100$
 $10^3 = 1000$
3. 2769 as a power of ten ...
 $(2 \times 10^3) + (7 \times 10^2) + (6 \times 10^1) + (9 \times 10^0)$

New

BEDMAS or BERDMAS or PERMDAS
 or BERMDAS or PERDMAS

- 1) Brackets (Parenthesis) are Always First!
- 2) Exponents A^n ; Radicals $\sqrt[n]{A}$ are 2nd, done in order L \rightarrow R
- 3) Division ; Multiplication are 3rd, done in order L \rightarrow R
- 4) Addition ; Subtraction are 4th, done in order L \rightarrow R

BEDMAS

Equation Vs. Expression → Equations have = sign

$$3^3 + 2^2 = 3^3 + 2^2$$

Ex 1 Evaluate [BERDMAS]

a) $3^3 + 2^3$
 $27 + 8 = 35$

b) $3 - 2^3$
 $3 - 8 = -5$

c) $(3+2)^3$
 $(5)^3 = 125$

calculator

$3^3 \rightarrow 3 \text{ [y^x] } 3 = 27$
base exponent

$3^3 \rightarrow 3 \text{ [^] } 3 = 27$

Ex 2 Evaluate [BERDMAS]

a) $[2 \times (-3)^3 - 6]^2$

$[2 \times (-27) - 6]^2$

$[-54 - 6]^2$

$[-60]^2$

$= 3600$

b) $(18^2 + 5^0)^2 \div (-5)^3$

$(324 + 1)^2 \div (-5)^3$

$(325)^2 \div (-125)$

$105625 \div (-125)$

$= -845$

HW

A
3-6

B
7,8,10

C
14,15

3a) $3^2 + 1$
 $9 + 1 = 10$

c) $(3+1)^2$
 $(4)^2 = 16$

e) $2^2 + 4$
 $4 + 4 = 8$

g) $(2+4)^2$
 $(6)^2 = 36$

i) $2 - 4^2$
 $2 - 16 = -14$

4a) $2^3 \times 5$
 $8 \times 5 = 40$

c) $(2 \times 5)^3$
 $(10)^3 = 1000$

e) $(-10)^3 \div 5$
 $-1000 \div 5 = -200$

b) $3^2 - 1$
 $9 - 1 = 8$

d) $(3-1)^2$
 $(2)^2 = 4$

f) $2^2 - 4$
 $4 - 4 = 0$

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

j) $2^2 - 4^2$
 $4 - 16 = -12$

b) 2×5^2
 $2 \times 25 = 50$

d) $(2 \times 5)^2$
 $(10)^2 = 100$

f) $(-10) \div 5^0$
 $-10 \div 1 = -10$