

### 2.3 – Order of Operations with Powers

Recall the order of operations:

**B** – brackets, innermost first

**E** – exponents

**D/M** – division/multiplication, from left to right

**A/S** – addition/subtraction, from left to right

Ex. 1: Evaluate.

(a)  $3^3 - 2^3$   
 $= 27 - 8$   
 $= 19$

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

(c)  $(3 - 2)^3$   
 $= (1)^3$   
 $= 1$

(d)  $[2 \times (-3)^3 - 6]^2$   
 $= [2 \times (-27) - 6]^2$   
 $= [-54 - 6]^2$   
 $= (-60)^2$   
 $= 3600$

$\begin{array}{r} 60 \\ 60 \\ \hline 3600 \end{array}$

(f)  $\frac{[-2 + 3^2 - (2005 - 3)^3]^0}{(-2)^3}$

$\frac{1}{-8}$

(e)  $[(-3)^2 + 5^0]^3 \div -5^2$   
 $= [9 + 1]^3 \div -5^2$   
 $= 10^3 \div -5^2$

$= \frac{1000}{-25}$   
 $= -40$

$25 \overline{) 1000}$   
 $\underline{40}$   
 $1000$   
 $\underline{1000}$   
 $0$

(e)  $\underline{[-3]^2 + 5^0}^3 \div \underline{-5^2}$  Short Version

$$= (9 + 1)^3 \div -25$$

$$= 10^3 \div -25$$

$$= 1000 \div -25$$

$$= -40$$

$$\boxed{\overset{-25}{=} -40}$$

0/0

Ex. 2: Dave answered a skill-testing question to win free movie tickets in the following manner:

$$\begin{aligned} &6^2 - 3 + 4 \\ &= \overline{36} - 3 + 4 \quad \rightarrow = 33 + 4 \\ &= \overline{36} - 7 \\ &= 29 \end{aligned}$$

$\boxed{= 37}$

Did he win the tickets?

No.

Assignment: p. 66 # 3-5 (even), 10, 11, 12, 14 (even)  
ex. b, d, f

Challenge #13, 19