

Order of Operations

8/16/18

P	Grouping	ex. (parenthesis) [brackets] ect.
E	Exponents	ex. 1^2
M	M/D	\times/\div ex. $4 \cdot 5 \div 2$
A	A/S	$+/-$ ex. $3 + 2 - 7 + 18$
S		

1) $3 + 2 \cdot 3^2 - 1$

No grouping symbols

So we do exponents: $3 + 2 \cdot 9 - 1$

Then we multiply/divide: $3 + 18 - 1$

Finally we add/subtract: $21 - 1$
20

2) $(\frac{21}{3})^2 - 2 \cdot 3$

Start with grouping symbol $(7)^2 - 2 \cdot 3$

Then exponent

$$49 - 2 \cdot 3$$

Next multiply/divide

$$49 - 6$$

Finally add/subtract

$$= 43$$

3) $3^4 - 2^4 \div 2^2$ → $3^4 = 3 \cdot 3 \cdot 3 \cdot 3$
 $81 - 16 \div 4$
77 $\begin{matrix} \vee & \vee \\ 9 & \cdot 9 \\ & 81 \end{matrix}$

4) $[(32 \div 4)^3 - 500]^3$

$(8)^3 - 500$

$[512 - 500]^3$

12^3

1,728

$12 \cdot 12 \cdot 12$

$144 \cdot 12$

$1440 + 288$

1728

$$\begin{aligned}
 5) \quad & \frac{2(-2)}{12-4(2)}^3 \\
 & \left(\frac{-4}{12-8} \right)^3 \\
 & \left(\frac{-4}{4} \right)^3 \\
 & (-1)^3 \\
 & -1
 \end{aligned}$$

* With fraction simplify the numerator (top) and denominator (bottom)

$$6) 2(m+1) - n^3 \quad m = -2 \quad n = 3$$

$$\begin{aligned}
 & 2(-2+1) - (3)^3 \\
 & 2(-1) - 27 \\
 & -2 - 27 \\
 & \boxed{-29}
 \end{aligned}$$

* substitute -2
 "in where you see
 "m" and substitute
 3 in where you
 see "n" *