

NOTE :

## Power of a Power

Rule : To raise a power to a power, Multiply the exponents.  
 $(a^m)^n = a^{m \times n}$

Ex 1. Evaluate  $(7^2)^5$

$$(7^2)(7^2)(7^2)(7^2)(7^2)$$

$$7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7$$

$$\rightarrow 7^{10} = 282,475,249$$

Ex2. Evaluate  $(4^3)^5$

$$\begin{aligned}(4^3)^5 &= 4^3 \times 4^3 \times 4^3 \times 4^3 \times 4^3 \\ &= 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4 \\ &\rightarrow = 4^{15} \\ &= 1,073,741,824\end{aligned}$$