Laws of Exponents

$$a^x \cdot a^y = a^{x+y}$$

$$2^2 \cdot 2^3 = (2 \cdot 2) \cdot (2 \cdot 2 \cdot 2) = 2^5$$

$$7^5 \cdot 7^4 = 7^9$$

$$\frac{a^x}{a^y} = a^{x-y}$$

$$\frac{2^3}{2^2} = \frac{8}{4} = 2 \qquad \frac{2 \cdot 2 \cdot 2}{2 \cdot 2} = 2$$

$$\frac{2^3}{2^2} = 2^{3-2} = 2^1 = 2$$

$(a^x)^y = a^{x \cdot y}$ $(2^2)^3 = 2^{2 \cdot 3} = 2^6$

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

$= 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

$= 2^6$

$2^5 \cdot 2^3 = 2^8$

$\frac{2^8}{2^5} = 2^3$

$(4^3)^5 = 4^{15}$

$$a^x \cdot a^y = a^{x+y}$$

$$\frac{a^x}{a^y} = a^{x-y}$$

$$(a^x)^y = a^{x \cdot y}$$