

$$y^3 \cdot y^5 = y^{3+5} = y^8$$

$$\frac{10^6}{10^3} = 10^{6-3} = 10^3 = 1000$$

$$x^{-5} \cdot x^1 = x^{-5+1} = x^{-4} = \frac{1}{x^4}$$

$$\frac{x^{-5} y^4}{x^{-6} y^6} = x^{-5+6} y^{4-6} = x^1 y^{-2} = \frac{x}{y^2}$$

$$\left(2^2\right)^3 = 2^{2 \cdot 3} = 2^6 = 64$$

$$421565^0 = 1$$