Q1/

$$* h(x)_\theta = \theta_0 x_1^2 x_2^4 - \theta_2 \theta_1 x_2^3 + \theta_0$$

Cost function /

$$J(\theta_0, \theta_1, \theta_2) = \frac{1}{2M} \sum (y^i - h_\theta(x^i))^2$$

a. Find the Partial derivatives /

① $\frac{\partial J}{\partial \theta_0}$ = $\frac{1}{2m} \sum (y^i - (\theta_0 x_1^2 x_2^4 - \theta_2 \theta_1 x_2^3 + \theta_0))^2 \cdot \frac{\partial i}{\partial \theta_0}$

$= \frac{1}{2m} (y^i - (\theta_0 x_1^2 x_2^4 - \theta_2 \theta_1 x_2^3 + \theta_0)) \cdot -1$

② $\frac{\partial J}{\partial \theta_1}$ = $\frac{1}{m} (y^i - (\theta_0 x_1^2 x_2^4 - \theta_2 \theta_1 x_2^3 + \theta_0)) \cdot -3 x_1^2 x_2^4 + \theta_2 x_2^8$

③ $\frac{\partial J}{\partial \theta_2}$ = $\frac{1}{m} (y^i - (\theta_0 x_1^2 x_2^4 - \theta_2 \theta_1 x_2^3 + \theta_0)) \cdot \theta_1 x_2^3$

b. write the formula to Calculate θ_2^{new} that minimize the cost function?

$$\theta_2 = \theta_2 - \alpha \frac{1}{m} (y^i - (\theta_0 x_1^2 x_2^4 - \theta_2 \theta_1 x_2^3 + \theta_0)) \cdot \theta_1 x_2^3$$