Graded Assignment 1
Machine Learning

1) a) $\theta^T \cdot X^{(i)}$

b) $\frac{1}{2m} \cdot \sum_{i=0}^{m} (X^{(i)}\theta - \vec{y})^T (X^{(i)}\theta - \vec{y})$

c) $\frac{\partial}{\partial \theta_j} J(\theta) = \frac{1}{m} \cdot \sum_{i=1}^{m} (h_\theta(X^{(i)}) - y^{(i)}) \cdot X_j^{(i)}$

d) $\theta_j := \theta_j - \alpha \cdot \frac{\partial}{\partial \theta_j} \cdot J(\theta)$

e) $X = \begin{pmatrix} x_0^0 & x_1^0 & x_2^0 & \dots & x_m^0 \\ x_0^1 & x_1^1 & \dots & & x_m^1 \\ \vdots & \vdots & & & \vdots \\ x_0^m & x_1^m & \dots & & x_m^m \end{pmatrix}$ ·

2)

$$X \cdot \theta^T = X \cdot \begin{pmatrix} \theta_0 \\ \theta_1 \\ \vdots \\ \theta_m \end{pmatrix} = \begin{pmatrix} h_\theta(x^0) \\ h_\theta(x^1) \\ h_\theta(x^2) \\ \vdots \\ h_\theta(x^m) \end{pmatrix}$$

3.