$$h_\theta(x^{(i)}) = \theta_0 + \theta_1 X^{(i)}$$

$$j(\theta) = \frac{1}{2M}\sum_{i=1}^{m}\left(h_\theta(x^{(i)}) - y^{(i)}\right)^2 = \frac{1}{2m}\sum_{i=1}^{m}\left(\theta_0 + \theta_1 x^{(i)} - y^{(i)}\right)^2$$

הנגזרה שלנו:

① $$\frac{dJ}{d\theta_0} = \frac{\cancel{2}}{\cancel{2}m}\sum_{i=1}^{m}\left(\theta_0 + \theta_1 x^{(i)} - y^{(i)}\right)\cdot 1$$

② $$\frac{dJ}{d\theta_1} = \frac{1}{m}\sum_{i=1}^{m}\left(\theta_0 + \theta_1 x^{(i)} - y^{(i)}\right)\cdot X^{(i)}$$

נניח כי יש לנו פתרון 1:

$$① \Rightarrow \theta_0 + \theta_1 X - Y = 0 \Rightarrow \theta_0 = Y - \theta_1 X$$

$$② \Rightarrow (\theta_0 + \theta_1 X - Y)X = 0 \Rightarrow \theta_1 = \frac{Y - \theta_0}{X}$$

לכן:

$$\theta_0 = \frac{1}{m}\sum_{i=1}^{m} Y^{(i)} - \theta_1 X^{(i)}$$

$$\theta_1 = \frac{1}{m}\sum_{i=1}^{m}\frac{Y^{(i)} - \theta_0}{X^{(i)}}$$