$$\frac{\partial}{\partial b} MSE = \frac{\partial}{\partial b} \sum_{i}^{N} (mx_i + b - y_i)^2$$

$$= \frac{\partial}{\partial b} \sum_{i}^{N} (m^2 x_i^2) + 2m(b+y)x_i + (b+y)^2$$

$$= \sum_{i}^{N} 2mx_i + 2b.$$

$$b_0 : 0 = \sum_{i}^{N} 2mx_i + 2b_0 = 2\sum_{i}^{N} mx_i + 2\sum_{i}^{N} b_0$$

$$b_0 = -\sum_{i}^{N} mx_i$$