

$$m = 1.26 \quad b = 1.9$$

$$\text{Point A}(1, 3) \quad \text{Point B}(3, 6)$$

$$\begin{aligned}\hat{y}_A &= 1.26(1) + 1.9 \\ &= 3.16 \rightarrow\end{aligned}$$

$$\begin{aligned}\hat{y}_B &= 1.26(3) + 1.9 \\ &= 5.68 \rightarrow\end{aligned}$$

$$\frac{\partial J}{\partial m} = -\frac{2}{n} \sum_{i=1}^n (y_i - \hat{y}_i) x_i$$

$$\begin{aligned}&= -\frac{2}{2} [(3 - 3.16) + (6 - 5.68)(3)] \\ &= -0.8\end{aligned}$$

$$\frac{\partial J}{\partial b} = -\frac{2}{n} \sum_{i=1}^n (y_i - \hat{y}_i)$$

$$\begin{aligned}&= -\frac{2}{2} [(3 - 3.16) + (6 - 5.68)] \\ &= -0.16\end{aligned}$$

$$m_{\text{new}} = m_{\text{old}} - \alpha \frac{\partial J}{\partial m}$$

$$\begin{aligned}&= 1.26 - 0.1(-0.8) \\ &= 1.34 \rightarrow\end{aligned}$$

$$b_{\text{new}} = b_{\text{old}} - \alpha \frac{\partial J}{\partial b}$$

$$\begin{aligned}&= 1.9 - 0.1(-0.16) \\ &= 1.916 \rightarrow\end{aligned}$$

$$\text{New equation: } y = 1.34x + 1.916 \rightarrow$$