

We have:

$$h(x) = \theta_0 + \theta_1 x$$

and

$$J(\theta_0, \theta_1) = \frac{1}{2m} \sum_{i=1}^m (h(x_i) - y_i)^2 \quad \text{with } m=4.$$

Also:

| X | Y | h(x) |
|---|---|------|
| 3 | 2 | 4 |
| 2 | 2 | 3 |
| 1 | 2 | 2 |
| 0 | 1 | 1 |
| 4 | 3 | 5 |

Since this is a linear regression problem, we also have:

$$\theta_0 := \theta_0 - \alpha \frac{1}{m} \sum_{i=1}^m (h(x_i) - y_i)$$

$$\theta_1 := \theta_1 - \alpha \frac{1}{m} \sum_{i=1}^m (h(x_i) - y_i) \cdot x_i$$

Initially, we set $\theta_0 = 1$, $\theta_1 = 1$ and $\alpha = 0.5$. Then we have:

$$\theta_0 := 1 - \frac{1}{8} [2 + 0 + 0 + 2] = 1 - \frac{1}{8} (4) = \frac{3}{4}$$

$$\theta_1 := 1 - \frac{1}{8} [2 + 0 + 0 + 8] = 1 - \frac{1}{8} (10) = -0.75$$