

## 2. Adm

$$\theta_0 = 0.20$$

$$\theta_1 = 0.26$$

$$J(\theta) = \frac{1}{2m} \sum_{i=1}^m (h_{\theta}(x_i) - y_i)^2$$

$$= \frac{1}{2 \cdot 3} \sum_{i=1}^3 (h_{\theta}(x_i) - y_i)^2 = \frac{1}{6} \left( (-0.8)^2 + (-1.54)^2 + (-2.28)^2 \right)$$
$$= 2.36$$

$$\frac{\partial J(\theta)}{\partial \theta_0} = \frac{1}{m} \sum_{i=1}^m (\theta_0 + \theta_1 x_i - y_i) = \frac{1}{3} [-0.8 - 1.54 - 2.28]$$
$$= -2.54$$

$$\frac{\partial J(\theta)}{\partial \theta_1} = \frac{1}{m} \sum_{i=1}^m (\theta_0 + \theta_1 x_i - y_i) x_i = \frac{1}{3} [-0.8 \cdot 0 + -1.54 \cdot 1 + -2.28 \cdot 2]$$
$$= -2.03$$

$$\theta_0 = 0.2 - (0.1) \cdot (-2.54) = 0.354$$

$$\theta_1 = 0.26 - (0.1) \cdot (-2.03) = 0.463$$

data	x	y	$h_{\theta}(x)$
-0.8	0	1	$0.2 + 0.06$
-1.54	1	2	$0.26 + 0.26$
-2.28	2	3	$0.2 + 2.06$



### 3. Adm

$$\theta_0 = 0,354$$

$$\theta_1 = 0,463$$

data	x	y	$h_0(x)$
-0,646	0	1	$0,354 + 0,063$
-2,183	2	2	$0,354 + 2 \cdot 0,463$
-2,72	2	3	$2 \cdot 0,463$

$$J(\theta) = \frac{1}{2 \cdot 3} \sum_{i=1}^3 (h_0(x_i) - y_i)^2 = \frac{1}{6} ((-0,646)^2 + (-2,183)^2 + (-2,72)^2)$$

$$= 0,795$$

$$\frac{dJ(\theta)}{d\theta_0} = \frac{1}{n} \sum_{i=1}^m (\theta_0 + \theta_1 x_i - y_i) = \frac{1}{3} (-0,646 + (-2,183) + (-2,72))$$

$$= -1,183$$

$$\frac{dJ(\theta)}{d\theta_1} = \frac{1}{n} \sum_{i=1}^m (\theta_0 + \theta_1 x_i - y_i) x_i = \frac{1}{3} ((-0,646) \cdot 0 + (-2,183) \cdot 2 + (-2,72) \cdot 2)$$

$$= -2,542$$

$$\theta_0 = 0,354 - (0,1) \cdot (-1,183) = 0,4723$$

$$\theta_1 = 0,463 - (0,1) \cdot (-2,542) = 0,6171$$