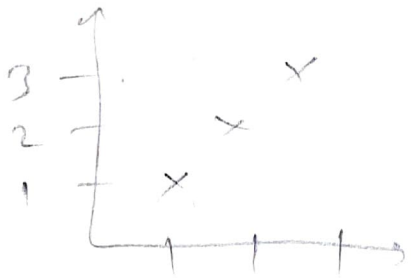
$h_\theta(x) = \theta_1 x$



$$J(\theta_1) = \frac{1}{2m} \sum_{i=1}^{m} (h_\theta(x^{(i)}) - y^{(i)})^2$$

1 2 3

i.e. $\theta_1 = 0 \Rightarrow h_\theta(x) = 0$

$$J(0) = \frac{1}{2\times 3} \left((0-1)^2 + (0-2)^2 + (0-3)^2 \right)$$

$$= \frac{1}{6}(1+4+9) = \frac{7}{3}$$

$$J(\theta_1) = \frac{1}{2m} \sum_{i=1}^{m} (\theta_1 x_i - y^{(i)})^2$$

---

gradient descent

$\min_{\theta_0, \theta_1} J(\theta_0, \theta_1)$

(1) Start at $\theta_0 = 0$, $\theta_1 = 0$ (it can be any value though)

(2) Keep changing θ_0 & θ_1 to reduce $J(\theta_0, \theta_1)$

(3) until we reach minimum