$(x^{(i)}, y^{(i)})$ = i^{th} training example

$x_1^{(1)} = 2104$

$x_1^{(2)} = 1416$

Choose θ s.t. $h(x) \approx y$ for training examples

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

minimize $\frac{1}{2} \sum_{i=1}^{n} (h_\theta(x^{(i)}) - y^{(i)})^2$

choose θ by

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

Choose θ s.t. $J(\theta)$ is minimized

Gradient descent

Start with θ (say $\theta = \vec{0}$)

Keep changing θ to reduce $J(\theta)$

$$\theta_j := \theta_j - \alpha \left(\frac{\partial}{\partial \theta_j} J(\theta) \right) \quad (j = 0, 1, 2, \ldots n)$$

$:=$ assignment operator → $a := a+1$ ↳ increment value of a by 1

α ↑ learning rate

$$\frac{\partial}{\partial \theta_j} J(\theta) = \frac{\partial}{\partial \theta_j} \frac{1}{2} (h_\theta(x) - y)^2$$