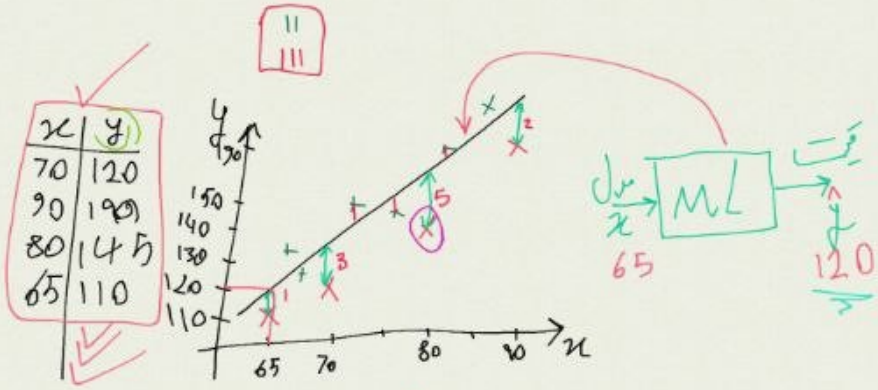


$f(x) \rightarrow f(65) = 120$

$x = 65 \begin{cases} y = 110 \\ \hat{y} = 120 \end{cases}$

$E = \hat{y} - y$

$10 \leftrightarrow 5 \quad E^{(1)} \rightarrow 5$

$5 \leftrightarrow 10 \quad E^{(2)} \rightarrow -5$

0

$E = |\hat{y} - y|$

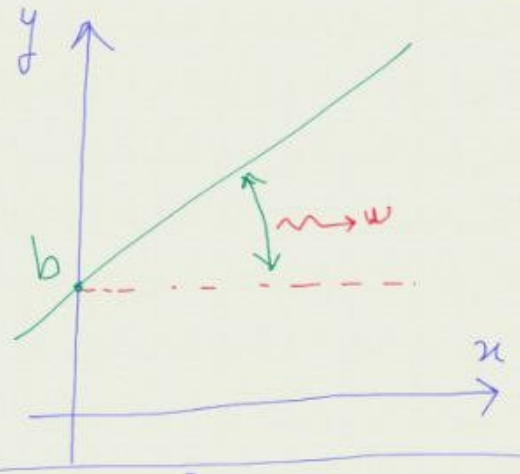
$E = (\hat{y} - y)^2 \rightarrow J^{(i)} = (\hat{y}^{(i)} - y^{(i)})^2$

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

$y = ax + b$

$y = wx + b$

w, b ✓



$$J = \frac{1}{2m} \sum_{i=1}^{m} \left(\hat{y}^{(i)} - y^{(i)} \right)^2$$

$$\hat{y} = wx + b$$

$$J = \frac{1}{2m} \sum_{i=1}^{m} \left(wx^{(i)} + b - y^{(i)} \right)^2$$

$$J_{(w,b)} = \frac{1}{2m} \sum_{i=1}^{m} \left(\hat{y}^{(i)} - y^{(i)} \right)^2$$

Goal $\longrightarrow$ $\min(J)$

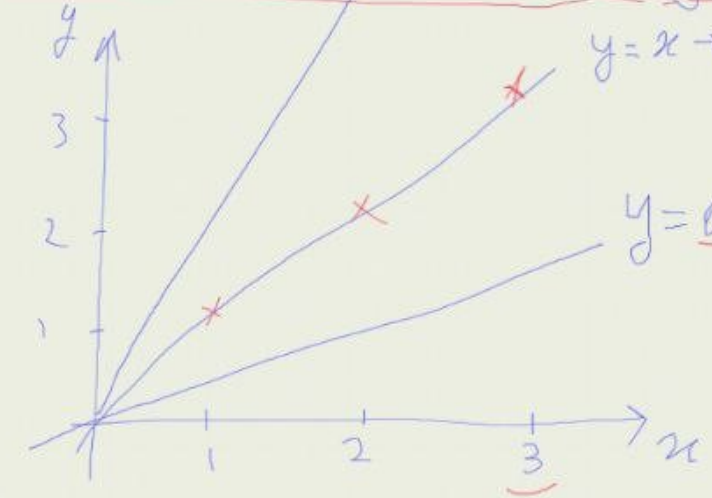
Parms → w, b

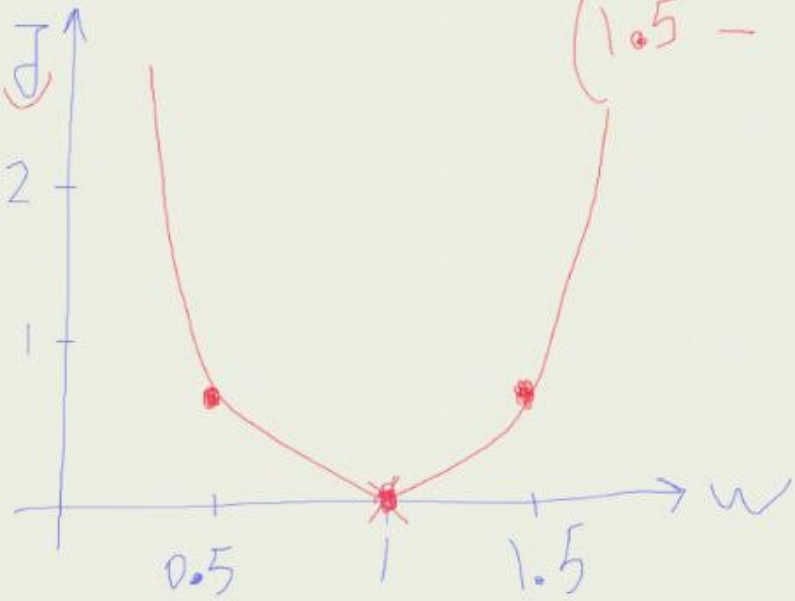
$$J = \frac{1}{2m} \sum_{i=1}^{m} \left(\underbrace{\hat{y}^{(i)}}_{wx^{(i)}} - y \right)^2$$

$b = 0 \longrightarrow \hat{y} = wx$

$y = x \rightarrow w = 1$

$y = 0.5x \rightarrow w = 0.5$

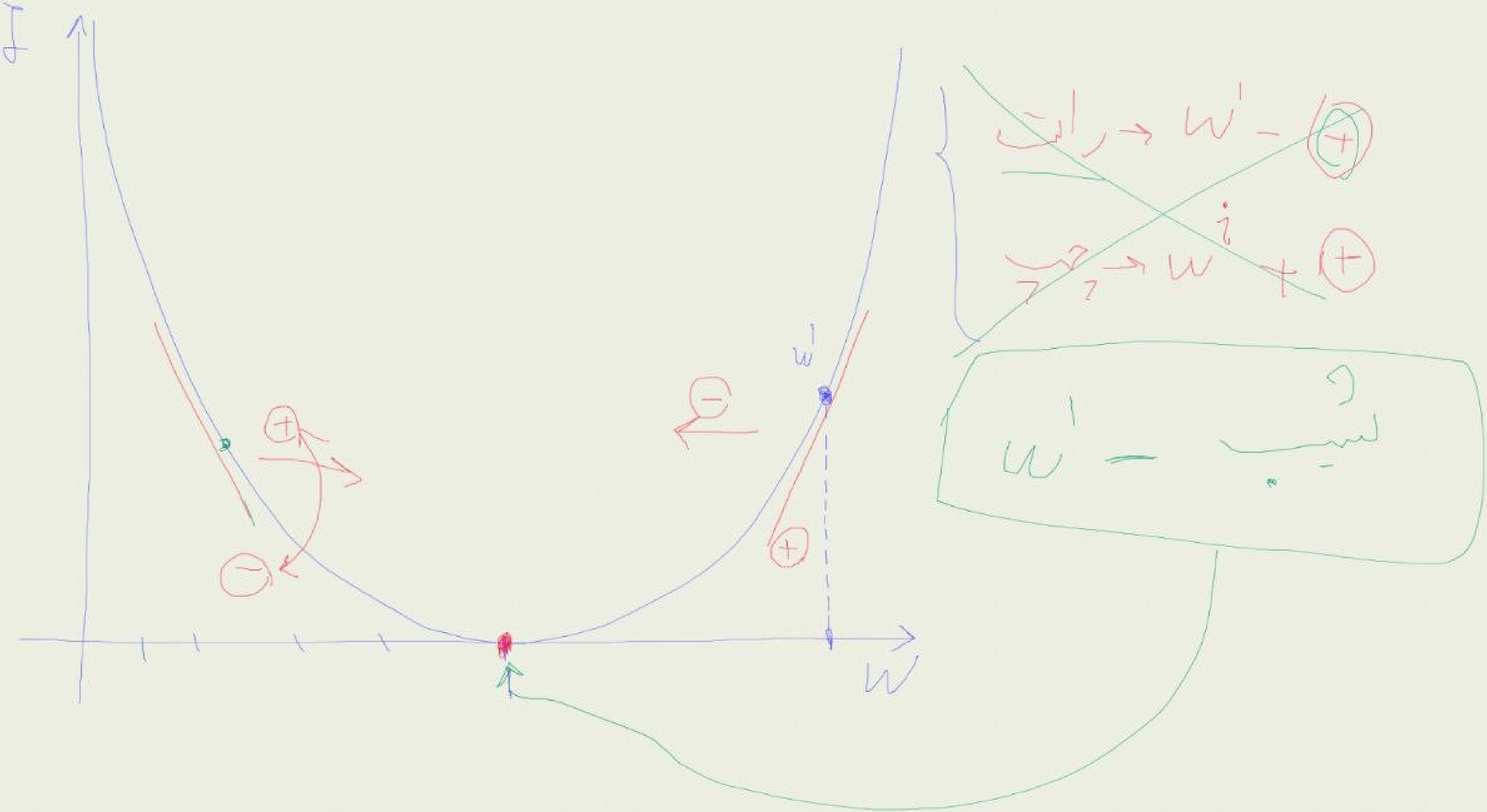




$(1.5 - 3)$

$J(0.5)$

$w = 0.5 \rightarrow J = \frac{1}{6}\left[0.25 + 1 + 2.25\right] = 0.58$


J
W
w'
−
+