Date: _____ M T W T F S S

①

- $x_1 = 2, x_2 = 3$
- $w_1 = 1, w_2 = 2, b = 1$

predict $\hat{y}$ is:

$$\hat{y} = w_1 x_1 + w_2 x_2$$

$$+b = 1 \cdot 2 + 2 \cdot 3 + 1 = 2 + 6 + 1 = 9$$

$y = 10$

$$\epsilon = y - \hat{y} = 10 - 9 = 1$$

The gradients of cost function

$$\frac{\partial J}{\partial w_1} = -\epsilon \cdot x_1 = -1 \times 2 = -2$$

$$\frac{\partial J}{\partial w_2} = -\epsilon \cdot x_2 = -1 \times 3 = -3$$

$$\frac{\partial J}{\partial b} = -1 = -1$$

Date: _____

M T W

Update parameters

$$m_1 = m_1 - \alpha \times \frac{\partial J}{\partial m_1}$$

$$= 1 - 0.1 \times (-2) = 1 + 0.2 = 1.2$$

$$m_2 = m_2 - \alpha \times \frac{\partial J}{\partial m_2}$$

$$= 2 - 0.1 \times (-3) = 2 + 0.3 = 2.3$$

$$b = b - \alpha \times \frac{\partial J}{\partial b}$$

$$= 1 - 0.1 \times (-1) = 1 + 0.1 = 1.1$$

So the match is

$$m_1 = 1.2, m_2 = 2.3, b = 1.1$$