

# ML HW1 404261476 楊培澤

1.

(a)

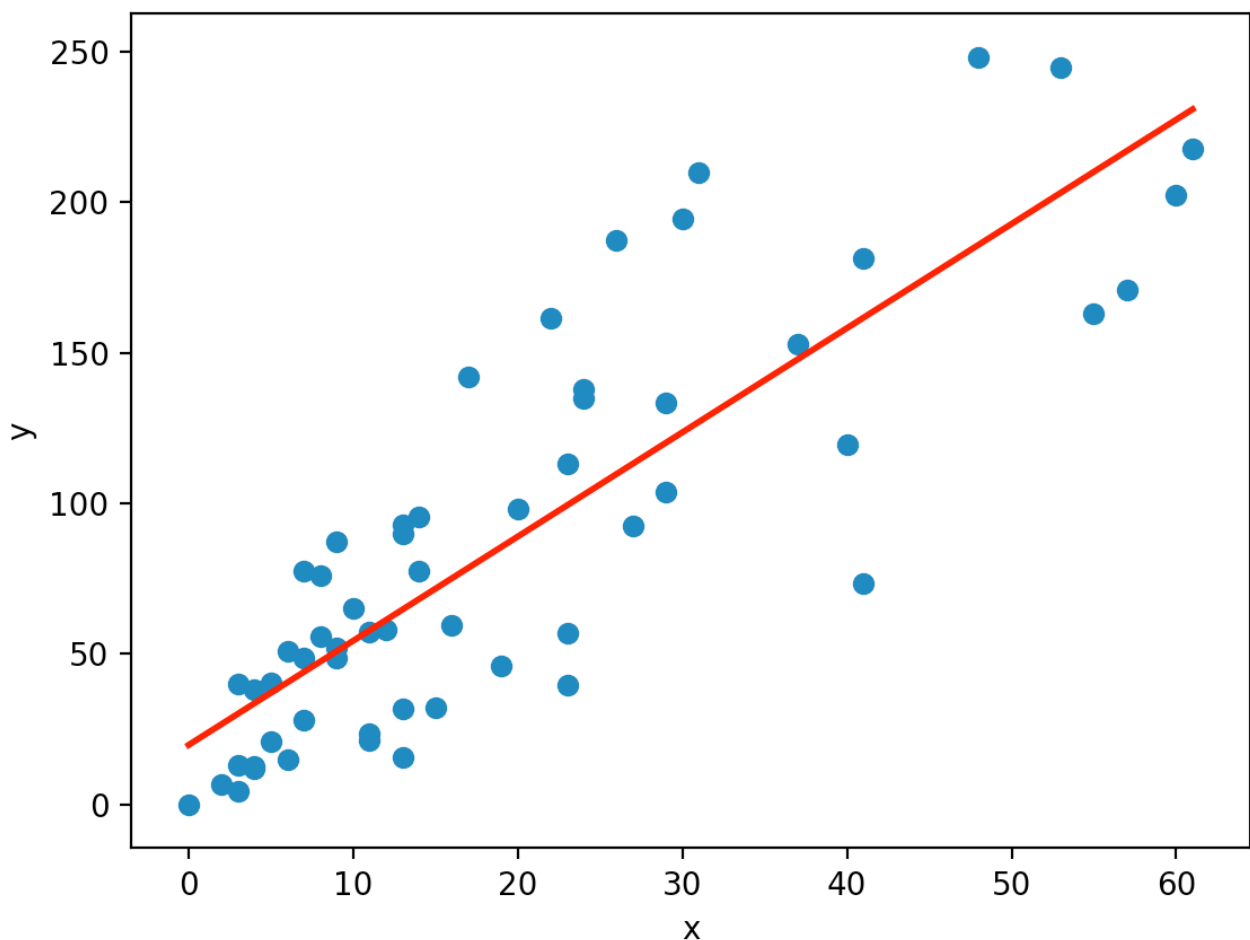
Initialize ( $w_0, w_1$ ) as (0, 0), running 10000 iteration and the learning rate is 0.00155

Result: Weight ( $w_0, w_1$ ) = (19.7669, 3.4598)

(b)

When  $x = 45$ , the predicted value will be 175.5

When  $x = 25$ , the predicted value will be 106.3



**2.**

**(a)**

**Initialize w as [ 0.0, 0.0, 0.0, 0.0, 0.0 ], running 20000 iteration and the learning rate is 0.000022**

**Result: Weight (w0, w1, w2, w3, w4) = (4.6643, -2.7496, 0.0172, 27.6912, 12.509)**

**(b)**

**When (x1, x2, x3, x4) = 6.8, 210, 0.402, 0.739, the predicted value will be 10.0**

**When (x1, x2, x3, x4) = 6.1, 180, 0.415, 0.713, the predicted value will be 11.4**

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Initialize w as [ 0.0, 0.0, 0.0, 0.0, 0.0 ],  
running 15000000 iteration and the learning rate is 0.0000002  
Result: Weight (w0, w1, w2, w3, w4) = (4.6643, -2.7496, 0.0172, 27.6912, 12.509), loss = 28.2511  
When (x1, x2, x3, x4) = 6.8, 210, 0.402, 0.739, the predicted value will be 10.0  
When (x1, x2, x3, x4) = 6.1, 180, 0.415, 0.713, the predicted value will be 11.4
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