< Cost Function >

- In order to implement linear regression, the first key step is to define a cost function

- Cost function will tell us how well the model is doing

  ↳ Build Cost function to find out optimal w, b for training data

Training set

features (x)	targets (y)
size in feet^2	price \$1000's
2104	460
1416	232
1534	315
852	178
⋮	⋮

⇒ model to use to fit this training set is ...

Model : $f_{w,b}(x) = wx + b$ (=linear function)

w, b = parameters

↳ parameters in machine learning means

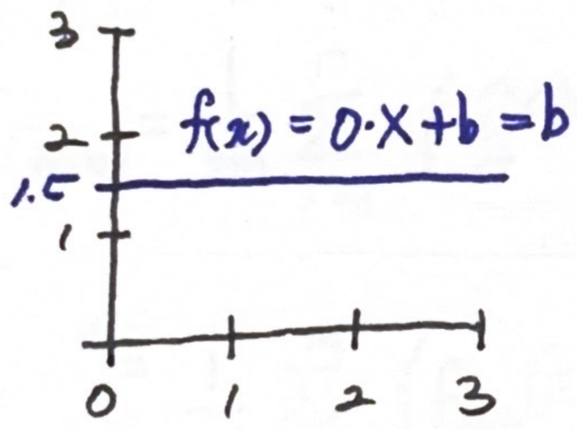
⇒ variables can be adjusted during training in order to improve model

< What do w, b do? >

- Depending on the values chosen for w and b, different function (model) $f(x)$ occurs.

$$f_{w,b}(x) = wx + b$$

i)



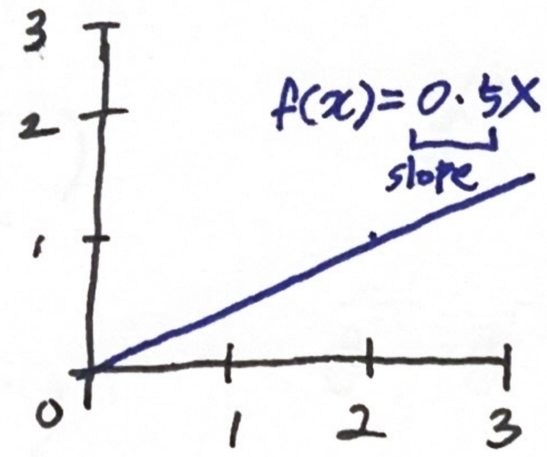
$w = 0$

$b = 1.5$

⇓

$f(x) = b = 1.5$

$\hat{y} = 1.5$

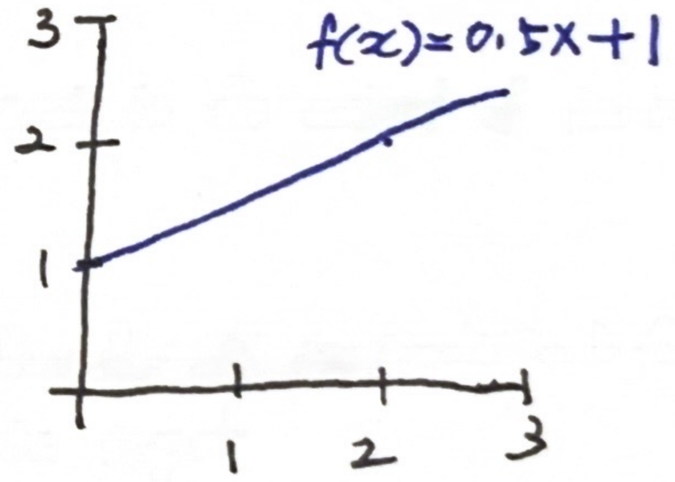


$w = 0.5$

$b = 0$

⇓

$f(x) = \underbrace{0.5}_{\text{slope}} x$



$w = 0.5$

$b = 1$

⇓

$f(x) = 0.5x + 1$