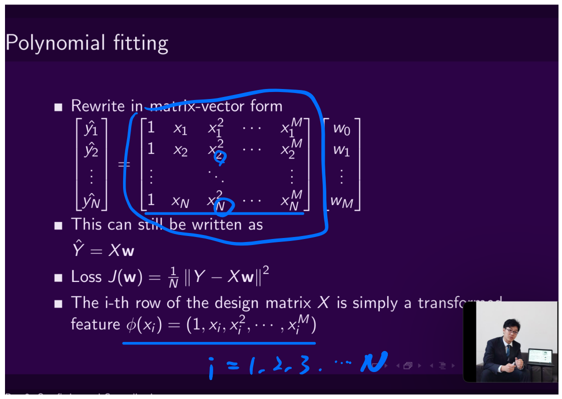


① $x + 1 = 2 \Rightarrow x = 1$

one function → one element

x.

② $\begin{cases} x + y = 2 \\ x + 2y = 3 \end{cases} \Rightarrow \begin{cases} x = 1 \\ y = 1 \end{cases}$

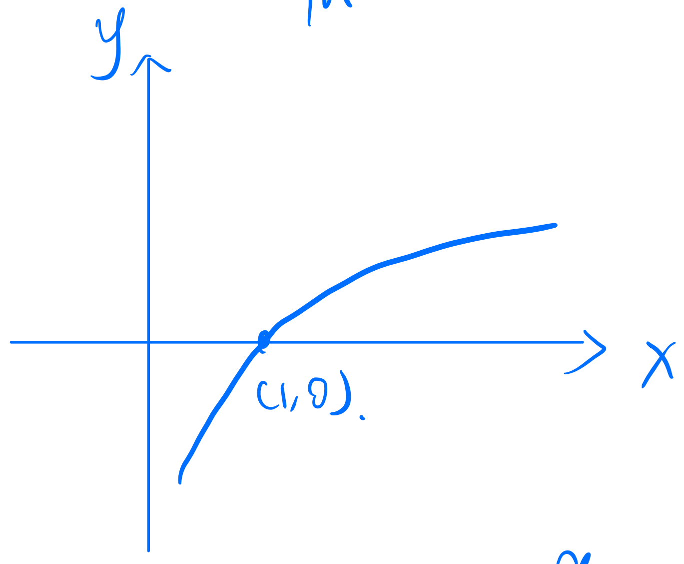
two functions → two ... x y

③

N function.

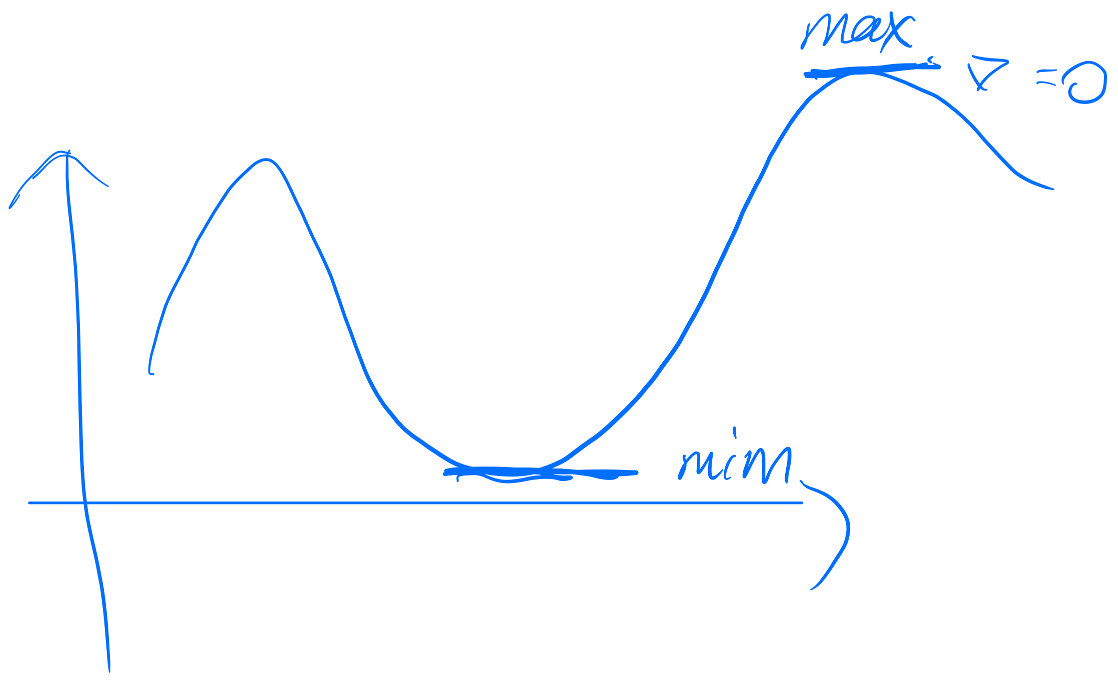
N element

ln

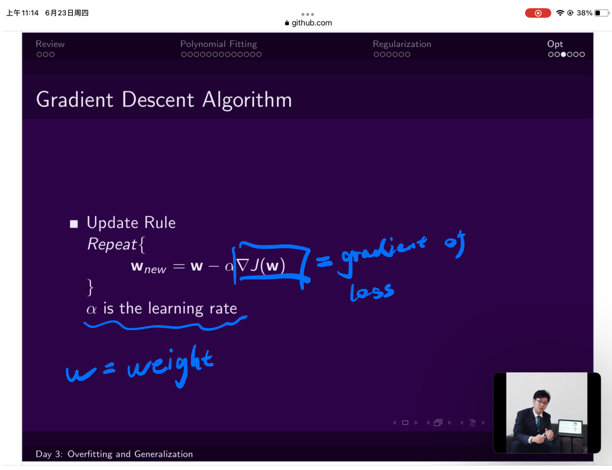


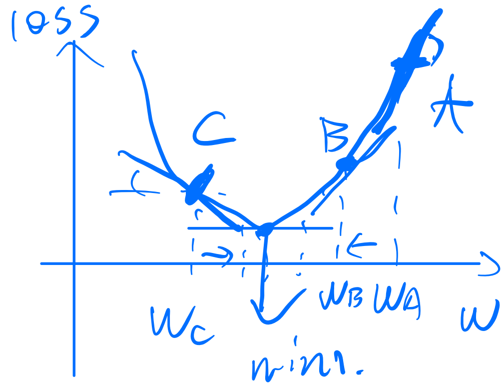
$y = \ln(x).$

$\lambda \quad 0.9 \,,\; 0.99$



$$W_{new} = w - \alpha \nabla J(w)$$





$$w_{new} = w - \alpha \cdot \nabla J(w)$$

$$A: \nabla J(w) > 0$$

$$\alpha \cdot \nabla J(w) > 0$$

$$W_{new} = w - \alpha \cdot \nabla J(w) \downarrow$$

$$C: \nabla J(w) < 0$$

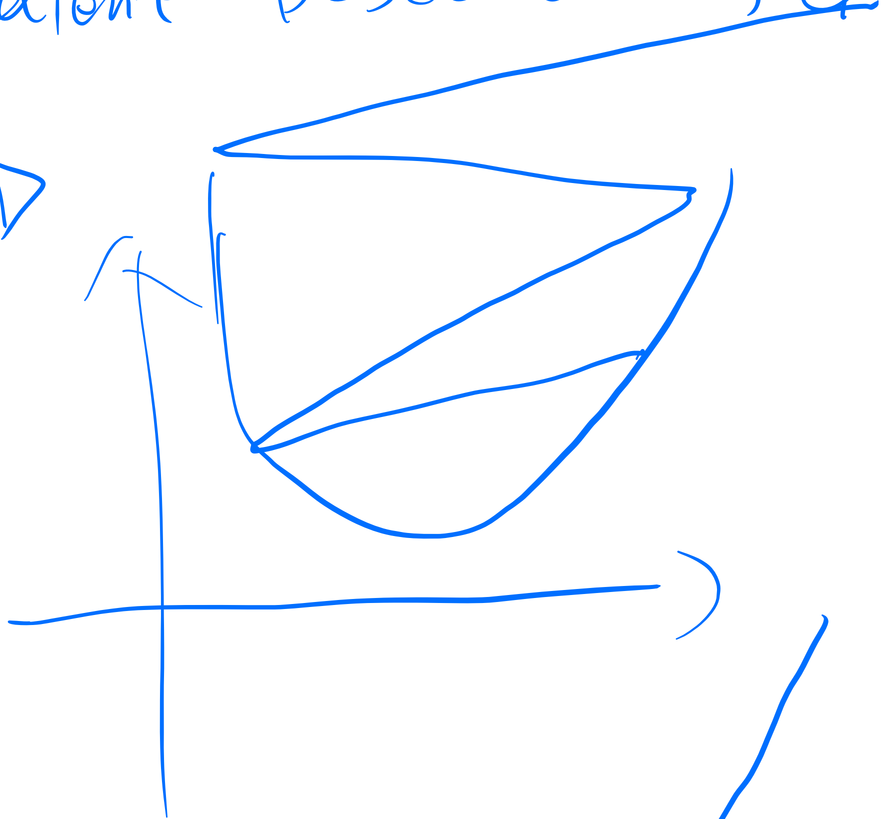
$$\alpha \cdot \nabla J(w) < 0$$

$$W_{new} = w - \alpha \nabla J(w) \uparrow$$

$$\alpha = 0.1,\ 0.01$$

Gradient Descent. $\Rightarrow$ GD.

SGD



$\because$ $DJ(w) = 0$.

$\alpha \uparrow$.

1 GB

$y = 3x^2 + 2x + 1$

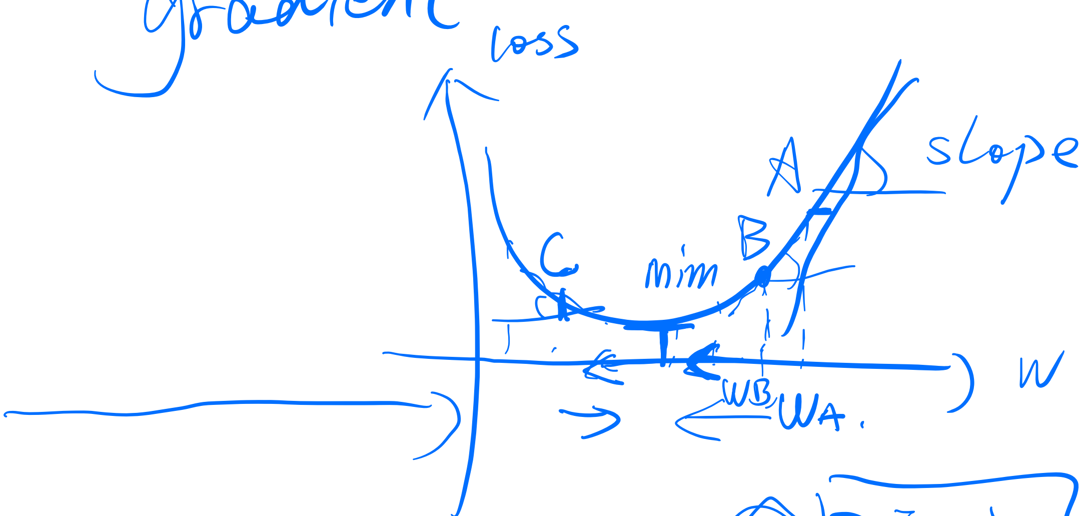
$> \rightarrow 0$

$\|W\|_2 =$

$+\infty$

$w_1^2 + w_2^2 + \ldots$

gradient



$W_{new} = w - \alpha \boxed{\nabla_w J(w)}$

> 0

Z

ξ

∂

$\nabla \Rightarrow 0$

$$y = 3x^2 + 2x + 1$$

$$\nabla y = 6x + 2 \Rightarrow 0$$

$$x = -\frac{1}{3}.$$

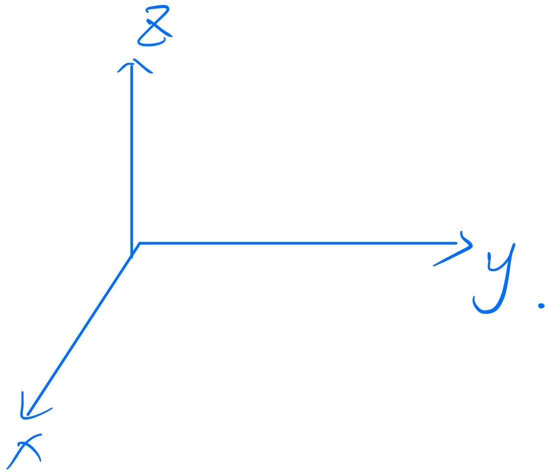
1 dime. $[1, 2, 3]$

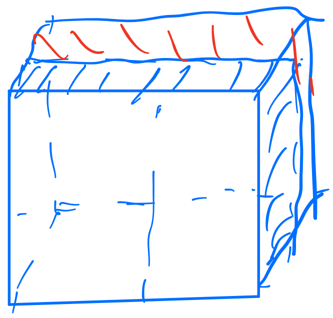
2 di'' $\begin{bmatrix} 1, & 2 \\ 3, & 4. \end{bmatrix}$

y

x

3 dim





$$\begin{bmatrix} 1, & 2 \\ 3, & 4 \end{bmatrix}$$

$$\begin{bmatrix} 5, & 6 \\ 7, & 8 \end{bmatrix}.$$