

x	$J(x)$
1	5
2	4
3	1
4	6
5	10

Minimize $J(x)$
Subject to

$$1 \leq x \leq 5$$

Can x shg $J(x)$ minimum!

* Curve fitting

3 titik data terkecil:

$$x=2 \rightarrow J(x)=4$$

$$x=3 \rightarrow J(x)=1$$

$$x=4 \rightarrow J(x)=6$$

$$\frac{dJ(x)}{dx} = 0 \rightarrow 2ax + b = 0$$

$$x = -\frac{b}{2a}$$

$$f(x) = ax^2 + bx + c$$

$$4a + 2b + c = 4$$

$$9a + 3b + c = 1$$

$$16a + 4b + c = 6$$

$$\begin{bmatrix} 4 & 2 & 1 \\ 9 & 3 & 1 \\ 16 & 4 & 1 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 4 \\ 1 \\ 6 \end{bmatrix}$$

$$\rightarrow \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 4 & 2 & 1 \\ 9 & 3 & 1 \\ 16 & 4 & 1 \end{bmatrix}^{-1} \begin{bmatrix} 4 \\ 1 \\ 6 \end{bmatrix}$$