

$$\underline{W} = \begin{pmatrix} w_0 \\ \vdots \\ w_k \end{pmatrix} \quad \underline{t} = \begin{pmatrix} t_1 \\ \vdots \\ t_n \end{pmatrix}$$

①

$$\underline{X} = \begin{pmatrix} 1 & x_1 & x_1^2 & x_1^3 \\ 1 & x_2 & x_2^2 & x_2^3 \\ 1 & x_3 & & \\ 1 & x_4 & & \end{pmatrix} \quad \downarrow \text{1 row per observation}$$

→ 1 col per input (attr/feature)

$$\underline{W} = \underbrace{(\underline{X}^T \underline{X})^{-1} \underline{X}^T}_{\text{np.linalg.pinv}(\underline{X}^T \underline{X})} \underline{t}$$

np.linalg.pinv( $\underline{X}^T \underline{X}$ ) \*  $\underline{X}^T$

$$x_{\text{test}} \rightarrow \begin{pmatrix} 1 & x_{\text{test}} & x_{\text{test}}^2 & \dots \end{pmatrix}$$

$$t_{\text{test}} = \underline{W}^T x_{\text{test}}$$

np.solve( $\underline{X}^T \underline{X}$ ,  $\underline{X}^T \underline{t}$ )