



$$\text{sales} = \text{const} + \beta_1 \text{TV} + \beta_2 \text{radio} + \beta_3 \text{news} + \beta_4 \text{TV}^2 + \dots + \beta_5 \text{TV}^3 + \beta_6 \text{TV} \cdot \text{radio}$$

Polynomial Features

$$X = \begin{bmatrix} 1 & 1 \\ x_1 & x_2 \\ 1 & 1 \end{bmatrix} \rightarrow y = \beta_0 + \beta_1 x_1 + \beta_2 x_2$$

$$X' = \begin{bmatrix} 1 & 1 & 1 & 1 & 1 \\ x_1 & x_2 & x_1^2 & x_1 \cdot x_2 & x_2^2 \end{bmatrix} \rightarrow$$

