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$$4) \quad y(x) = ax^2 + bx^5$$

$$S(a, b) = \sum_{i=1}^N (y_i - ax^2 - bx^5)^2$$

$$\frac{\partial S}{\partial a} = \sum_{i=1}^N 2(y_i - ax^2 - bx^5)(2x) = \sum_{i=1}^N 4(y_i x - ax^3 - bx^6) = 0$$

$$\frac{\partial S}{\partial b} = \sum_{i=1}^N 2(y_i - ax^2 - bx^5)(5x^4) = \sum_{i=1}^N 10(y_i x^4 - ax^6 - bx^9) = 0$$

$$\begin{bmatrix} \sum_{i=1}^N x^3 & \sum_{i=1}^N x^6 \\ \sum_{i=1}^N x^6 & \sum_{i=1}^N x^9 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} \sum_{i=1}^N y_i x \\ \sum_{i=1}^N y_i x^4 \end{bmatrix}$$