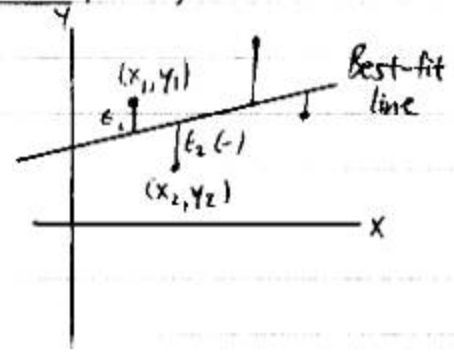
2.5: LEAST SQUARES REGRESSION ANALYSIS (p. 99) Stats!

If had 6 points, would we try to fit a quintic?

for modeling the data

See Ex 10 (p 102)



We want the linear model
$y = a_0 + a_1 x$
that minimizes the sum of squared errors ($\Sigma \epsilon_i^2$).
($\Sigma \epsilon_i = 0$)

We need $\begin{bmatrix} a_0 \\ a_1 \end{bmatrix}$ ← "A"

Let $X = \begin{bmatrix} 1 & x_1 \\ 1 & x_2 \\ \vdots & \vdots \\ 1 & x_n \end{bmatrix}$

x_i don't need to be sorted

"1"s — plug in x coords.

be consistent

and $Y = \begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_n \end{bmatrix}$

plug in y coords.

Then, $A = \underbrace{\underbrace{(X^T X)^{-1}}_{1st}\ \underbrace{X^T Y}_{2nd\ (vector)}}_{3rd}$ ← vector of coeffs. (If nec, I'll give you this on a test)

$4th$

It's got everything: matrix mult., T, $^{-1}$