

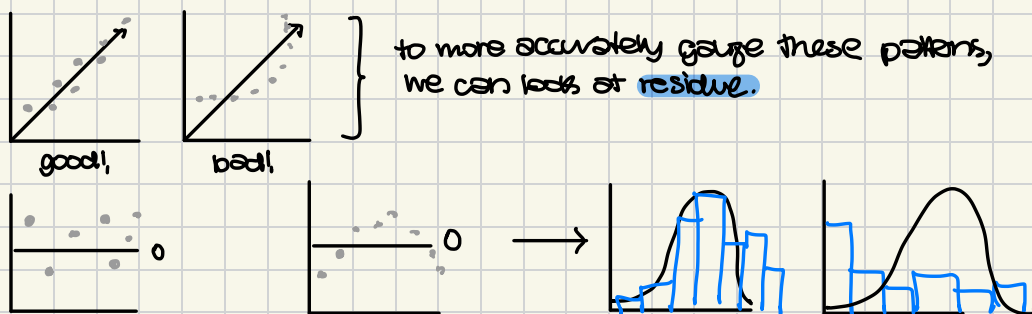
8/19 class notes

→ model Testing

- if a series of data are acquired, what model would be used to fit the relationship?
- how do we know if our function fits the data well?

→ we can use the least squares method to evaluate goodness of fit.

- taking look at the uncertainty / variance, if datapoints somewhat randomly fluctuate around a predicted model, it may be suitable.



residue fluctuates randomly around 0.

→ follows gaussian distribution!

→ histogram would be appropriate.

residue is not random.

this works!

this doesn't.

→ Rigorous methods of model testing:

- "how likely do our cases represent a dataset derived from noisy measurements of $y = mx + b$?"
- chi-squared test:

$$\chi^2 = \sum_i^n \left(\frac{y_i - y(x_i; m, b)}{\sigma_i} \right)^2$$

degrees of freedom (dof) =
of data points
- # of fitting parameters.

↑

- if the χ^2 is around the degree of freedom, the fitting is good.