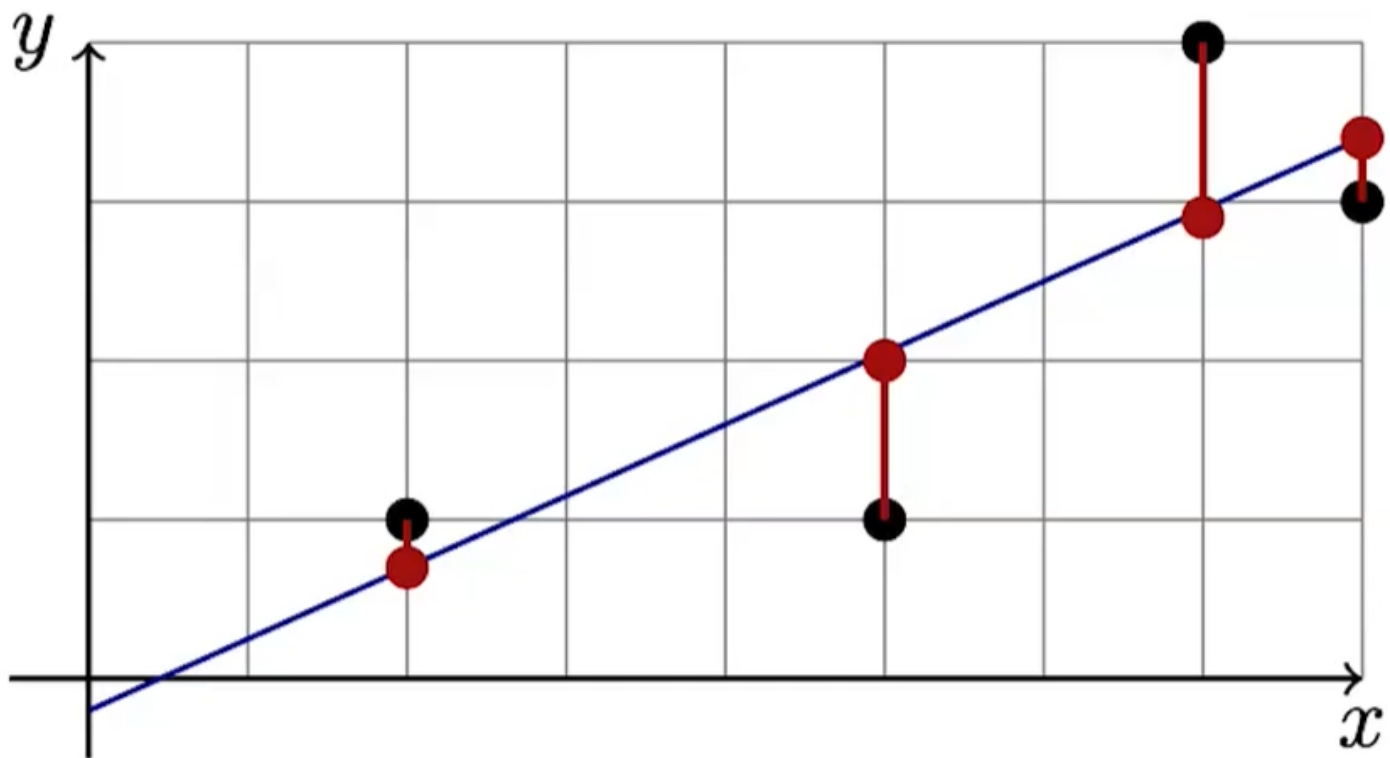


Deviation

This is closely related to [Least Squares](#)



The red lines are the deviation/error in approximation.

We were finding an \hat{x} to minimize $\|A\hat{x} - b\|$.

This is the same thing as minimizing $\|A\hat{x} - b\|^2$.

Now, over all \hat{x} ,

$$\|A\hat{x} - b\|^2 = \|r\|^2 = \sum_{i=1}^n r_i^2$$