① MSE.

$$y = (x - \hat{x})^2$$

take first derivatives and set it to 0

⇒ gee the minimum

$$\left(\sum_{i=1}^{n} (x_i - \hat{x})^2 \right)' = 0.$$

$$\left(\sum_{i=1}^{n} (x_i^2 - 2x_i\hat{x} + \hat{x}^2) \right)' = 0$$

$$\sum_{i=1}^{n} (2x_i - 2\hat{x}) = 0$$

$$x_i = \hat{x}. = \text{average} \#$$