

§1 | Дано биодорна  $y_i$ ,  $\tilde{y} = \text{const} = a$

$$L = \sum_i (y_i - \tilde{y})^2 = \sum_i (y_i - a)^2$$

$$\frac{\partial L}{\partial a} = -2 \sum_i (y_i - a) = 0 \Rightarrow \sum_i (y_i - a) = 0$$

$$\Rightarrow \sum_i y_i = p \cdot a \Rightarrow a = \boxed{\tilde{y} = \frac{1}{p} \sum_i y_i}$$

§3 | Рисмо  $X\omega = y$  - негодопр. система

$\Rightarrow$  ~~Най~~ Найсн. решение с  $\|\omega\|^2 = \omega^\top \omega \rightarrow \min$

$$L = \omega^\top \omega - \lambda(X\omega - y)$$

$$\frac{\partial L}{\partial \omega} = 2\omega - X^\top \cancel{\lambda} = 0 \Rightarrow \omega = \cancel{\lambda} \frac{X^\top \lambda}{2} \Rightarrow$$

$$\Rightarrow y = X\omega = X \cdot \frac{X^\top \lambda}{2} \Rightarrow \lambda = 2 \underbrace{(X X^\top)^{-1}}_{} y$$

правое псевдообр.