Вариант №5.

x	y
5	2
5,2	4
5,4	4
5,6	3
5,8	3
6	3

$S(x) = kx + b \Rightarrow MSE = \sum_{i=1}^{6}(y_i - S(x_i))^2 = \sum_{i=1}^{6}(y_i - (kx_i + b))^2$

$\frac{\partial MSE}{\partial k} = -2\sum_{i=1}^{6}(y_i - (kx_i + b))x_i = 0$

$\frac{\partial MSE}{\partial b} = -2\sum_{i=1}^{6}(y_i - (kx_i + b)) = 0$

$\sum_{i=1}^{6} y_i x_i - k\sum_{i=1}^{6} x_i^2 - b\sum_{i=1}^{6} x_i = 0$

$\sum_{i=1}^{6} y_i - k\sum_{i=1}^{6} x_i - \sum_{i=1}^{6} b = 0$

$\sum_{i=1}^{6} y_i x_i = 104,6$

$\sum_{i=1}^{6} x_i = 33$; $\sum_{i=1}^{6} x_i^2 = 182,2$

$\sum_{i=1}^{6} y_i = 19$

$\left.\begin{array}{l} \Rightarrow 104,6 - 182,2k - 33b = 0 \\ 19 - 33k - 6b = 0 \end{array}\right\} \Rightarrow b = -\frac{33k - 19}{6} \Rightarrow b = -2,38$

$104,6 - 182,2k + 33\,\frac{33k - 19}{6} = 0$

$104,6 - 182,2k + 181,5k - 104,5 = 0$

$-0,699k = -0,1 \Rightarrow k = 0,143$

$\sum_{i=1}^{6} x_i^3 = 1009,8$

$\sum_{i=1}^{6} x_i^4 = 5617,566$

$\sum_{i=1}^{6} x_i^2 y_i = 577,8$

$6a_0 + a_1\sum_{i=1}^{6} x_i + a_2\sum_{i=1}^{6} x_i^2 = \sum_{i=1}^{6} y_i$

$a_0\sum_{i=1}^{6} x_i + a_1\sum_{i=1}^{6} x_i^2 + a_2\sum_{i=1}^{6} x_i^3 = \sum_{i=1}^{n} x_i y_i$

$a_0\sum_{i=1}^{6} x_i^2 + a_1\sum_{i=1}^{6} x_i^3 + a_2\sum_{i=1}^{6} x_i^4 = \sum_{i=1}^{6} x_i^2 y_i$

$$\Delta = \begin{vmatrix} 6 & 33 & 182,2 \\ 33 & 182,2 & 1009,8 \\ 182,2 & 1009,8 & 5617,566 \end{vmatrix} \quad ; \; b = \begin{vmatrix} 19 \\ 104,6 \\ 577,8 \end{vmatrix}$$

$\Delta = 0,2492$; $\Delta_1 = -33,156$; $\Delta_2 = 12,355$; $\Delta_3 = -1,12$

$a_0 = -133,049$; $a_1 = 49,598$; $a_2 = -4,494$