

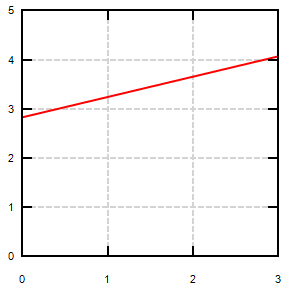
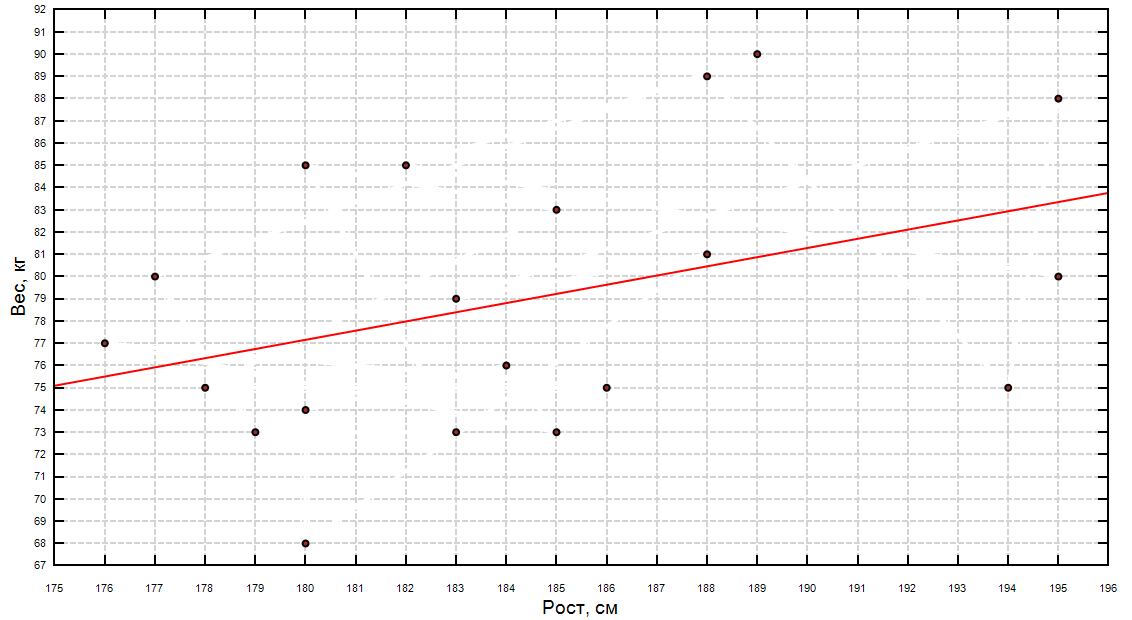
$Data := \begin{bmatrix} 189 & 177 & 179 & 183 & 180 & 185 & 178 & 186 & 176 & 185 & 184 & 180 & 180 & 188 & 183 & 195 & 194 & 188 & 182 & 195 \\ 90 & 80 & 73 & 73 & 85 & 83 & 75 & 75 & 77 & 73 & 76 & 74 & 68 & 81 & 79 & 88 & 75 & 89 & 85 & 80 \end{bmatrix}$

$n := \text{cols}(Data) = 20$ $PocT := \text{col}(Data^T, 1)$ $Bec := \text{col}(Data^T, 2)$

$\min(PocT) = 176$ $\text{Mean}(PocT) = 184.35$ $\max(PocT) = 195$

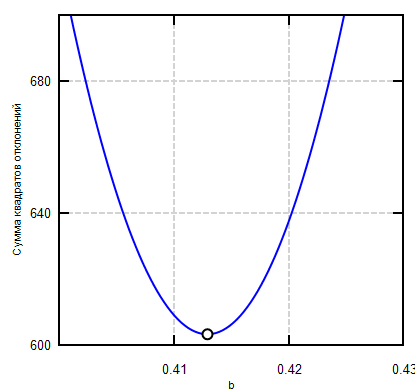
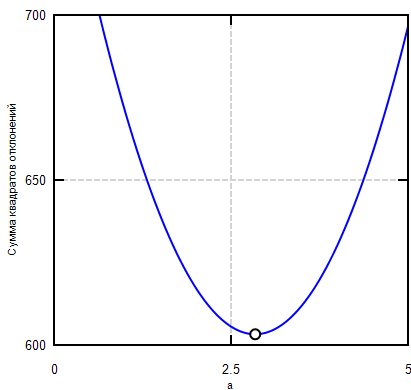
$\min(Bec) = 68$ $\text{Mean}(Bec) = 78.95$ $\max(Bec) = 90$

$a := \text{Intercept}(PocT, Bec) = 2.833$ $b := \text{Slope}(PocT, Bec) = 0.4129$ $Bec(PocT) := a + b \cdot PocT$



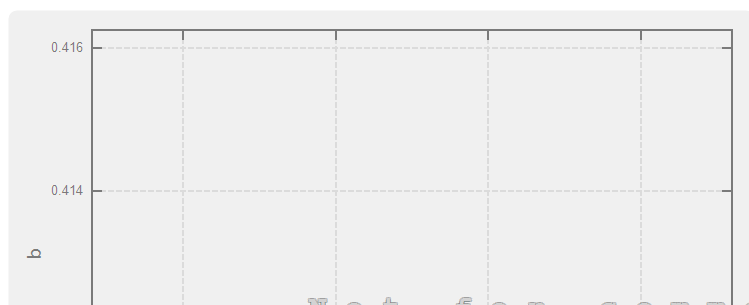
$$\begin{cases} Data^T \\ \text{вec}(PocT) \end{cases} \quad \begin{cases} Data^T \\ \text{вec}(PocT) \end{cases} \quad \begin{cases} 79 - (a + b \cdot 183) = 0.6074 \\ 81 - (a + b \cdot 188) = 0.5429 \end{cases}$$

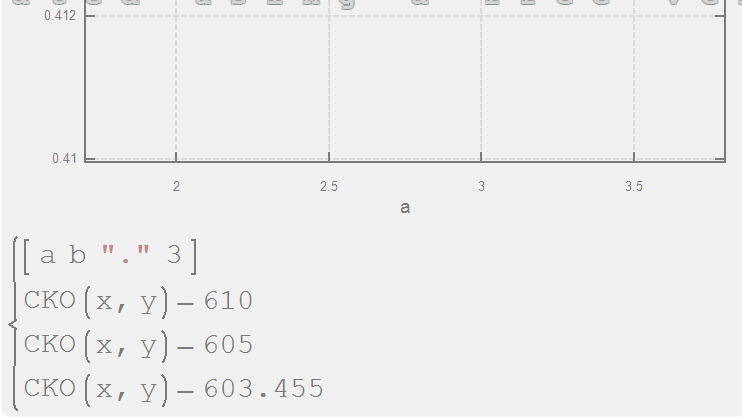
$$CKO(a, b) := \sum_{i=1}^n \left(Bec_i - (a + b \cdot PocT_i) \right)^2 = 603.5$$



$$Data^T = \begin{bmatrix} 189 & 90 \\ 177 & 80 \\ 179 & 73 \\ 183 & 73 \\ 180 & 85 \\ 185 & 83 \\ 178 & 75 \\ 186 & 75 \\ 176 & 77 \\ 185 & 73 \\ 184 & 76 \\ 180 & 74 \\ 180 & 68 \\ 188 & 81 \\ 183 & 79 \\ 195 & 88 \\ 194 & 75 \\ 188 & 89 \\ 182 & 85 \\ 195 & 80 \end{bmatrix}$$

$$\begin{cases} CKO(x, b) \\ [a \quad CKO(a, b) \quad ". \quad " \quad 5] \end{cases} \quad \begin{cases} CKO(a, x) \\ [b \quad CKO(a, b) \quad ". \quad " \quad 5] \end{cases}$$





Clear(a, b)=1

$$CKO(a, b) := \sum_{i=1}^n \left(Bec_i - (a + b \cdot PoCT_i) \right)^2$$

$$\begin{bmatrix} a_0 \\ b_0 \end{bmatrix} := \text{eval} \left(\text{roots} \left(\begin{bmatrix} \frac{d}{d a} CKO(a, b) = 0 \\ \frac{d}{d b} CKO(a, b) = 0 \end{bmatrix}, \begin{bmatrix} a \\ b \end{bmatrix} \right) \right) = \begin{bmatrix} 2.833 \\ 0.4129 \end{bmatrix}$$

Clear(a, b, c)=1

$$CKO2(a, b, c) := \sum_{i=1}^n \left(Bec_i - \left(a + b \cdot PoCT_i + c \cdot (PoCT_i)^2 \right) \right)^2$$

$$\begin{bmatrix} a \\ b \\ c \end{bmatrix} := \text{Broyden} \left(\begin{bmatrix} \frac{d}{d a} CKO2(a, b, c) = 0 \\ \frac{d}{d b} CKO2(a, b, c) = 0 \\ \frac{d}{d c} CKO2(a, b, c) = 0 \end{bmatrix}, \begin{bmatrix} -1 \\ 1 \\ -1 \end{bmatrix} \right) = \begin{bmatrix} -284.2923 \\ 3.5061 \\ -0.0083 \end{bmatrix}$$

i := [1..n] c := 0.3

$$c \cdot PoCT_i = \begin{bmatrix} 56.7 \\ 53.1 \\ 53.7 \\ 54.9 \\ 54 \\ 55.5 \\ 53.4 \\ 55.8 \\ 52.8 \\ 55.5 \\ 55.2 \\ 54 \\ 54 \\ 56.4 \\ 54.9 \\ 58.5 \end{bmatrix}$$

Why?

$$c \cdot (PoCT_i)^2 = 2.041 \cdot 10^5$$

$$c \cdot PoCT_i^2 = \blacksquare$$

Because ...

k := [1..3] u := stack(4, 5, 6)

$$3 + 2 \cdot u_k = \begin{bmatrix} 3 + 2 \cdot 4 \\ 3 + 2 \cdot 5 \\ 3 + 2 \cdot 6 \end{bmatrix} = \begin{bmatrix} 11 \\ 13 \\ 15 \end{bmatrix}$$

58.2
56.4
54.6
58.5