Метод Гаусса

6.3

$$\begin{bmatrix} 0.03 & 58.9 \\ 5.31 & -6.10 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 59.2 \\ 47.0 \end{bmatrix}$$

$$\left[\begin{array}{cc|c} 0.03 & 58.9 & 59.2 \\ 5.31 & -6.10 & 47.0 \end{array}\right] \sim$$

$$\sim \left[\begin{array}{cc|c} 0.03 & 58.9 & 59.2 \\ 5.31 - \dfrac{0.03}{0.03}\cdot 5.31 & -6.10 - \dfrac{58.9\cdot 5.31}{0.03} & 47.0 - \dfrac{59.2\cdot 5.31}{0.03} \end{array}\right]$$

$$= \left[\begin{array}{cc|c} 0.03 & 58.9 & 59.2 \\ 0 & -10419.2 & -10431.4 \end{array}\right] \qquad x_1 = \dfrac{b_1 - a_{12}x_2}{a_{11}}$$

$$x_2 = \dfrac{-10431.4}{-10419.2} \approx 1.001 \qquad x_2 = \dfrac{b_2^{(1)}}{a_{22}^{(1)}}$$

$$x_1 = \dfrac{59.2 - 58.9\cdot 1.001}{0.03} \approx \;\rule{3cm}{0.4cm}\; 8.037$$

для частичного выбора гл. элемента.

$$\left[\begin{array}{cc|c} 5.31 & -6.10 & 47.0 \\ 0.03 & 58.9 & 59.2 \end{array}\right] \sim$$

$$\sim \left[\begin{array}{cc|c} 5.31 & -6.10 & 47.0 \\ 0.03 - \dfrac{5.31}{5.31}\cdot 0.03 & 58.9 - \dfrac{(-6.10)}{5.31}\cdot 0.03 & 59.2 - \dfrac{47.0}{5.31}\cdot 0.03 \end{array}\right]$$

$$= \left[\begin{array}{cc|c} 5.31 & -6.10 & 47.0 \\ 0 & 58.934 & 58.934 \end{array}\right]$$

$$x_2 = \frac{58.934}{58.534} = 1$$

$$x_1 = \frac{47.0 + 6.10 \cdot 1}{5.31} = 10$$

Точное решение. (в простых дробях)

$$\begin{cases} 0.03 x_1 + 58.9 x_2 = 59.2 \\ 5.31 x_1 - 6.10 x_2 = 47.0 \end{cases} \Rightarrow$$

$$\Rightarrow \begin{cases} 0.03 x_1 + \dfrac{58.9}{6.1} \cdot (5.31 x_1 - 47.0) = 59.2 \\ x_2 = \dfrac{5.31 x_1 - 47.0}{6.10} \end{cases}$$

$$\Rightarrow \begin{cases} x_1 = \dfrac{1805600 + 1384150}{156471} = 10 \\ x_2 = \dfrac{531 \cdot 10 - 4700}{610} \end{cases} \Rightarrow \begin{cases} x_1 = 10 \\ x_2 = \dfrac{610}{610} = 1 \end{cases}$$