K/p #3.

① $\sqrt[5]{\frac{-2i}{2-5i}} = \sqrt[5]{\frac{-4i+10}{4+25}} = \sqrt[5]{+\frac{10}{29} - \frac{4}{29}i} =$

$= \sqrt[5]{\sqrt{\frac{116}{29^2}}\left(\frac{5}{\sqrt{29}} - \frac{2}{\sqrt{29}}i\right)} =$

$\frac{2}{\sqrt{29}} = p \quad \cos\varphi \Rightarrow \varphi = 0,4\cos\frac{5}{\sqrt{29}}$

$\sqrt[5]{z} = \sqrt[5]{p}\left(\cos\frac{\varphi + 2\pi k}{5} + i\sin\frac{\varphi + 2\pi k}{n}\right)$

que $k = 0, 1, 2, 3, 4$

$k=0:$ $\sqrt[5]{\frac{2}{\sqrt{29}}\left(\frac{5}{\sqrt{29}} - \frac{2}{\sqrt{29}}i\right)} = -0,07602$

$= \sqrt[5]{\frac{2}{\sqrt{29}}}\left(\cos\frac{-0,4\cos\frac{5}{\sqrt{29}}}{5} + i\,\mathrm{sen}\frac{-0,4\cos\frac{5}{\sqrt{29}}}{5}\right)$ $0,99710$

$\approx 0,8179 \pm i\cdot 0,06235$

③
$$\left[\begin{array}{ccccc} 1 & 1 & -1 & 2 & -6 \\ 0 & 1 & 0 & 1 & -3 \\ -2 & -2 & 3 & -4 & 12 \\ 0 & -1 & 0 & -1 & 3 \\ 3 & 3 & -4 & 6 & -18 \end{array}\right] \sim \left[\begin{array}{ccccc} 1 & 0 & 0 & 1 & -3 \\ 0 & 1 & 0 & 1 & -3 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{array}\right]$$

$$\begin{cases} x_2 = -x_4 + 3x_5 \\ x_2 = -x_4 + 3x_5 \\ x_3 = 0 \end{cases} \quad \begin{array}{l} x_4 = 0, \; x_5 = 1: \\ \bar{x}_1 = (3\;3\;0\;0\;1)^t \\ x_4 = 1 \quad x_5 = 0 \\ \bar{x}_2 = (-1\;-1\;0\;1\;0) \end{array}$$

(3)

$$\left[\begin{array}{ccccc|c} 1 & -2 & 2 & 5 & 12 & b_1 \\ 1 & -1 & 0 & 3 & 5 & b_2 \\ -1 & 3 & -3 & -7 & -16 & b_3 \\ -3 & 5 & -3 & -13 & -26 & b_4 \\ 3 & -8 & 8 & 19 & 43 & b_5 \end{array}\right] \sim \left[\begin{array}{ccccc|c} 1 & -2 & 0 & 3 & 5 & b_1 \\ 0 & -1 & 2 & 2 & 6 & b_2 - b_1 \\ 0 & 2 & -3 & -4 & -11 & b_3 + b_1 \\ 0 & 2 & -3 & -4 & -11 & b_4 + 3b_1 \\ 0 & -5 & 8 & 10 & 28 & b_5 - 3b_1 \end{array}\right]$$

$$\sim \left[\begin{array}{ccccc|c} 1 & -2 & 0 & 3 & 5 & b_1 \\ 0 & -1 & 2 & 2 & 6 & b_2 - b_1 \\ 0 & 0 & 1 & 0 & 1 & b_3 - b_2 + 2b_1 \\ 0 & 0 & -2 & 0 & -2 & b_5 + 2b_2 - 5b_1 \\ 0 & 0 & 0 & 0 & 0 & b_4 + 3b_2 - b_3 \end{array}\right] \sim$$

$$\sim \left[\begin{array}{ccccc|c} 1 & -2 & 0 & 3 & 5 & b_1 \\ 0 & 1 & 2 & 2 & 6 & b_2 - b_1 \\ 0 & 0 & 1 & 0 & 1 & b_3 - b_2 + 2b_1 \\ 0 & 0 & 0 & 0 & 0 & b_5 + 2b_3 - b_1 = 0 \\ 0 & 0 & 0 & 0 & 0 & b_4 + 2b_2 - b_3 = 0 \end{array}\right]$$

$$\left[\begin{array}{ccccc} 1 & 0 & -2 & 0 & -1 \\ 0 & 1 & 2 & 2 & 0 \end{array}\right] \sim \left[\begin{array}{c} 1 \\ \end{array}\right.$$

$$x_{1,2} \begin{cases} b_1 = 2b_3 + b_5 \\ b_2 = \frac{1}{2}(b_3 \mp b_4) \end{cases}$$

$$\begin{cases} \xi_1 - \xi_2 + \xi_3 = 0 \\ \xi_1 - \xi_2 + \xi_4 = 0 \\ -\xi_1 - \xi_2 + \xi_4 = 0 \end{cases}$$

$\exists\ b_3 = t,\ b_4 = b_5 = 0 : \vec{X}_1 = (t\ t\ t\ 0\ 0)^T$

$b_4 = t,\ b_3 = b_5 = 0 : \vec{X}_2 = (0\ t\ 0\ t\ 0)^T$

$b_5 = t,\ b_3 = b_4 = 0 : \vec{X}_3 = (t\ 0\ 0\ 0\ t)^T$

(4)
$$\left[\begin{array}{ccccc|c} t & -t & -t & t & -6 & -44 \\ 0 & t & 0 & -t & 2 & 24 \\ t & -t & 0 & -t & -t & -27 \\ t & -t & -t & -t & -4 & -47 \\ t & t & -t & -t & 0 & -16 \end{array}\right] \sim \left[\begin{array}{ccccc|c} t & -t & 0 & -t & -t & -17 \\ 0 & 0 & -t & 2 & -5 & -27 \\ 0 & t & 0 & -t & 3 & t4 \\ 0 & t & -t & t & -2 & -t3 \\ 0 & 2 & -t & 0 & t & t \end{array}\right] \sim$$

$$\sim \left[\begin{array}{ccccc|c} t & -t & 0 & -t & -t & 17 \\ 0 & t & 0 & -t & 3 & 14 \\ 0 & 0 & t & -2 & 5 & 27 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{array}\right]$$

$\exists: \begin{cases} x_4 = 0 & x_5 = t \\ x_4 = t & x_5 = 0 \end{cases}$ Нека $\exists: x_4 = x_5 = 0$

$(-2\ -3\ -5\ 0\ t)^T = X_1$

$(2\ t\ 2\ t\ 0)^T = X_2$

$(1\ 4\ 2\ 7\ 0\ 0)^T$

(5)
$$\left[\begin{array}{ccc|cc} 2 & 3 & -3 & 0 & 0 \\ 0 & t & 0 & 0 & 0 \\ -3 & -8 & 5 & 2 & -5 \\ -2 & -5 & 3 & -t & 3 \end{array}\right] \sim \left[\begin{array}{ccc|cc} 6 & 9 & -9 & 0 & 0 \\ 0 & t & 0 & 0 & 0 \\ -6 & -16 & 10 & 4 & -10 \\ -6 & -15 & 9 & -3 & 9 \end{array}\right] \sim$$

$$\sim \left[\begin{array}{ccc|cc} 2 & 0 & -3 & 0 & 0 \\ 0 & t & 0 & 0 & 0 \\ 0 & 0 & t & 4 & -10 \\ 0 & 0 & 0 & -3 & 9 \end{array}\right] \sim \left[\begin{array}{ccc|cc} 1 & 0 & 0 & 1 & 3 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 4 & -10 \\ 0 & 0 & 0 & -3 & 9 \end{array}\right] \sim$$

$1 \leftrightarrow 3$

Базис сумата v_1, v_2, v_3, u_t