

Вариант 27

N1

$$L(u_1) = 3u_1 - 2u_2 + u_3$$

$$L(u_2) = -u_1 + u_2$$

$$L(u_3) = 3u_3$$

$$A = \begin{pmatrix} 3 & -1 & 0 \\ -2 & 1 & 0 \\ 1 & 0 & 3 \end{pmatrix}$$

N2

$$L\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -x \\ y \end{pmatrix}$$

$$L = \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$$

N3

$$e_1 = \begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} \quad e_2 = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$$

$$e_3 = \begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix}$$

$$L(e_1) = \begin{pmatrix} 4 & 3 \\ 3 & 3 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} + \begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} \begin{pmatrix} 4 & 3 \\ 3 & 3 \end{pmatrix} = \begin{pmatrix} 8 & 0 \\ 0 & 0 \end{pmatrix} = 8e_1$$

$$L(e_2) = \begin{pmatrix} 4 & 3 \\ 3 & 3 \end{pmatrix} \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} + \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 4 & 3 \\ 3 & 3 \end{pmatrix} = \begin{pmatrix} 6 & 7 \\ 7 & 6 \end{pmatrix} = 7e_2 + 6e_1 + 6e_3$$

$$L(e_3) = \begin{pmatrix} 4 & 3 \\ 3 & 3 \end{pmatrix} \begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix} + \begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 4 & 3 \\ 3 & 3 \end{pmatrix} = \begin{pmatrix} 0 & 0 \\ 0 & 6 \end{pmatrix} = 6e_3$$

$$L = \begin{pmatrix} 8 & 6 & 0 \\ 0 & 7 & 0 \\ 0 & 6 & 6 \end{pmatrix}$$