1

1) .

$$\begin{pmatrix} 3 & 0 & 0 \\ -2 & -3 & 0 \\ 0 & 1 & 5 \end{pmatrix} \begin{pmatrix} 3 & 2 & -3 \\ 3 & 1 & 2 \\ 0 & 1 & 5 \end{pmatrix} \begin{pmatrix} 3 & -5 & 0 \\ 3 & 4 & -1 \\ 3 & 0 & 5 \end{pmatrix}$$

2) AA^T A^TA, :

$$A = \begin{pmatrix} -1 & -5 & -3 & 0 & -3 \end{pmatrix}$$

3) AB BA ( ),

$$A = \begin{pmatrix} 1 & 4 & 2 \\ 4 & 4 & 0 \end{pmatrix}, \quad B = \begin{pmatrix} 4 & 1 \\ 0 & 4 \\ -1 & 0 \end{pmatrix}$$

4) .

$$\begin{vmatrix} 2 & -3 \\ -7 & -2 \end{vmatrix}$$

5) .

$$y'' + y = 3x^2 + x + 6$$

6) .

$$y'' - 9y = 24e^{3x}$$

7) .

$$y'' + 6y' + 9y = \frac{e^{-3x}}{x}$$

2

1) .

$$\begin{pmatrix} 3 & 2 & -3 \\ 0 & 4 & 0 \\ 3 & 0 & 5 \end{pmatrix} \begin{pmatrix} 3 & 0 & 1 \\ 0 & 1 & -1 \\ -4 & 1 & 5 \end{pmatrix} \begin{pmatrix} -1 & 2 & -3 \\ 3 & 1 & 2 \\ 0 & 1 & 1 \end{pmatrix}$$

2) AA^T A^TA, :

$$A = \begin{pmatrix} -4 & -5 \\ 4 & 2 \\ 1 & -1 \end{pmatrix}$$

3) AB BA ( ),

$$A = \begin{pmatrix} 1 & 2 & 2 \\ 2 & 2 & 0 \end{pmatrix}, \quad B = \begin{pmatrix} 2 & 1 \\ 0 & 2 \\ -1 & 0 \end{pmatrix}$$

4) .

$$\begin{vmatrix} -1 & 5 \\ -7 & 7 \end{vmatrix}$$

5) .

$$y'' + y = (4x + 4)\, e^x$$

6) .

$$y'' - y = 3e^{2x}$$

7) .

$$y'' + 4y' + 4y = \frac{e^{-2x}}{x}$$
