

$$\begin{bmatrix} 2 & 2 & 0 \\ 2 & 1 & 1 \\ 0 & -2 & 2 \end{bmatrix} \quad 2+1+2=5$$

$$\begin{vmatrix} 2 & 2 \\ 2 & 1 \end{vmatrix} + \begin{vmatrix} 2 & 0 \\ 0 & 2 \end{vmatrix} + \begin{vmatrix} 1 & 1 \\ -2 & 2 \end{vmatrix} = -2 + 4 + 4 = 6$$

$$2 \begin{vmatrix} 1 & 1 \\ -2 & 2 \end{vmatrix} - 2 \begin{vmatrix} 2 & 1 \\ 0 & 2 \end{vmatrix} = 8 - 8 = 0$$

0, 2, 3

$$0 \quad [2 \ 2 \ 1] \begin{bmatrix} 2 & 2 & 0 \\ 2 & 1 & 1 \\ 0 & -2 & 2 \end{bmatrix} \begin{bmatrix} 1 \\ -1 \\ -1 \end{bmatrix}$$

$$\begin{array}{c} 2 \ -2 \ 1 \\ 1 \ \begin{vmatrix} 2 & -2 & 1 \\ -2 & 2 & -1 \\ -2 & 2 & -1 \end{vmatrix} / 3 \end{array}$$

$$2 \quad [1 \ 0 \ 1] \begin{bmatrix} 0 & 2 & 0 \\ 2 & -1 & 1 \\ 0 & -2 & 0 \end{bmatrix} \begin{bmatrix} 1 \\ 0 \\ -2 \end{bmatrix}$$

$$\begin{array}{c} 1 \ 0 \ 1 \\ 1 \ \begin{vmatrix} 1 & 0 & 1 \\ 0 & 0 & 0 \\ -2 & 0 & -2 \end{vmatrix} / -1 \end{array}$$

$$3 \quad [2 \ 1 \ 1] \begin{bmatrix} -1 & 2 & 0 \\ 2 & -2 & 1 \\ 0 & -2 & -1 \end{bmatrix} \begin{bmatrix} 2 \\ 1 \\ -2 \end{bmatrix}$$

$$\begin{array}{c} 2 \ 1 \ 1 \\ 2 \ \begin{vmatrix} 4 & 2 & 2 \\ 2 & 1 & 1 \\ -4 & -2 & -2 \end{vmatrix} / 3 \end{array}$$

$$e^{At} = \frac{1}{3} \begin{bmatrix} 2 & -2 & 1 \\ -2 & 2 & -1 \\ -2 & 2 & -1 \end{bmatrix} + e^{2t} \begin{bmatrix} -1 & 0 & -1 \\ 0 & 0 & 0 \\ 2 & 0 & 2 \end{bmatrix} + \frac{e^{3t}}{3} \begin{bmatrix} 4 & 2 & 2 \\ 2 & 1 & 1 \\ -4 & -2 & -2 \end{bmatrix}$$