

$$|A| = \begin{vmatrix} 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & 0 \\ 2 & 2 & 2 & 2 \\ 3 & 3 & 3 & 3 \end{vmatrix} = + \begin{vmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \\ 3 & 3 & 3 \end{vmatrix} = \cancel{27} -$$

$$-\cancel{\begin{vmatrix} 2 & 1 \\ 3 & 3 \end{vmatrix}} + \cancel{\begin{vmatrix} 2 & 1 \\ 3 & 3 \end{vmatrix}} = 2 \cdot 3 - 2 \cdot 3 = \underline{0}$$

$$\begin{vmatrix} \cancel{1} & \cancel{2} \\ \cancel{2} & \cancel{1} \end{vmatrix} = 1 \cdot 1 - 2 \cdot 2 = -3$$

$$\begin{vmatrix} \cancel{1} & \cancel{2} & \cancel{2} \\ \cancel{2} & \cancel{1} & \cancel{3} \\ \cancel{2} & \cancel{3} & \cancel{1} \end{vmatrix} = 1 \cdot 1 \cdot 1 + 2 \cdot 3 \cdot 2 + 2 \cdot 2 \cdot 3 - 2 \cdot 1 \cdot 2 - 2 \cdot 2 \cdot 1 - 1 \cdot 3 \cdot 3 = \\ = 1 + 12 + 12 - 4 - 4 - 9 = 8$$

1 1 1 1 1 1  
2 2 2 2 2 2  
3 3 3 3 3 3  
4 4 4 4 4 4  
5 5 5 5 5 5

$$\begin{vmatrix} A & A & A \\ 0 & 0 & 1 \\ 0 & 0 & 0 \end{vmatrix}^3 = 1 = 1$$

21/12.4)

$$-12 - (-12) + 8$$

$$\underline{B} = \left| \begin{array}{ccc|c} 0 & -4 & 6 \\ 1 & -2 & 3 \\ 1 & 0 & 2 \end{array} \right| \xrightarrow{\text{I} \leftrightarrow \text{II}} \left| \begin{array}{ccc|c} 1 & -2 & 3 \\ 0 & -4 & 6 \\ 1 & 0 & 2 \end{array} \right| \xrightarrow{\text{III} - \text{I}} \left| \begin{array}{ccc|c} 1 & -2 & 3 \\ 0 & -4 & 6 \\ 0 & 2 & -1 \end{array} \right| \xrightarrow{\text{III} + \text{II}} \left| \begin{array}{ccc|c} 1 & -2 & 3 \\ 0 & -2 & 3 \\ 0 & 0 & 1 \end{array} \right|$$

$$\xrightarrow{\text{III} \times -2} \left| \begin{array}{ccc|c} 1 & -2 & 3 \\ 0 & -2 & 3 \\ 0 & 0 & 2 \end{array} \right| = -(-4) = 8$$