

4/16/2019

Quiz Wk 3

Lyell Read ~~XXXXXXXXXX~~

$$A = \begin{pmatrix} 1 & 1 & 1 \\ 1 & 2 & 2 \\ 1 & 2 & 3 \end{pmatrix} \text{ find } A^{-1}$$

$$\left(\begin{array}{ccc|ccc} 1 & 1 & 1 & 1 & 0 & 0 \\ 1 & 2 & 2 & 0 & 1 & 0 \\ 1 & 2 & 3 & 0 & 0 & 1 \end{array} \right) \xrightarrow{(\textcircled{1} \cdot 2) - 2} \left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 2 & -1 & 0 \\ 1 & 2 & 2 & 0 & 1 & 0 \\ 1 & 2 & 3 & 0 & 0 & 1 \end{array} \right)$$

$$\xrightarrow{(\textcircled{2} - \textcircled{1})} \left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 2 & -1 & 0 \\ 0 & 2 & 2 & -2 & 0 & 0 \\ 1 & 2 & 3 & 0 & 0 & 1 \end{array} \right) \xrightarrow{2 \cdot \frac{3}{2}} \left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 2 & -1 & 0 \\ 0 & 3 & 3 & 0 & \frac{3}{2} & 0 \\ 1 & 2 & 3 & 0 & 0 & 1 \end{array} \right)$$

$$\xrightarrow{(\textcircled{2} - \textcircled{3})} \left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 2 & -1 & 0 \\ 0 & -1 & 0 & 0 & \frac{3}{2} & -1 \\ 1 & 2 & 3 & 0 & 0 & 1 \end{array} \right) \xrightarrow{(\textcircled{2} + \textcircled{1})} \left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 2 & -1 & 0 \\ 0 & 1 & 0 & 2 & \frac{1}{2} & -1 \\ 1 & 2 & 3 & 0 & 0 & 1 \end{array} \right)$$

$$\xrightarrow{(\textcircled{3} - \textcircled{1})} \left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 2 & -1 & 0 \\ 0 & 1 & 0 & 2 & \frac{1}{2} & -1 \\ 0 & 2 & 3 & -2 & 1 & 1 \end{array} \right) \xrightarrow{(\textcircled{3} - 2 \cdot \textcircled{2})} \left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 2 & -1 & 0 \\ 0 & 1 & 0 & 2 & \frac{1}{2} & -1 \\ 0 & 0 & 3 & -6 & 0 & 3 \end{array} \right) \quad 4 \quad 1 \quad -2$$

$$\xrightarrow{(\textcircled{3})/3} \left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 2 & -1 & 0 \\ 0 & 1 & 0 & 2 & \frac{1}{2} & -1 \\ 0 & 0 & 1 & -2 & 0 & 1 \end{array} \right)$$

$$\therefore A^{-1} = \begin{pmatrix} 2 & -1 & 0 \\ 2 & \frac{1}{2} & -1 \\ -2 & 0 & 1 \end{pmatrix}$$