

Kurumbapalayam (Po), Coimbatore - 641 107



#### AN AUTONOMOUS INSTITUTION

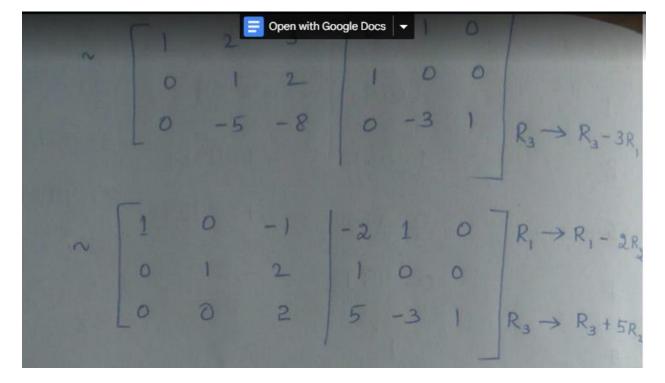
Inverse of a Matrix by Gauss-Jordan

(1) Find the inverse of 
$$A = \begin{pmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{pmatrix}$$
 by

Gauss-Jordan method.

Consider.

(A/I) = 
$$\begin{bmatrix} 0 & 1 & 2 & | & 1 & 0 & 0 \\ 1 & 2 & 3 & | & 0 & 1 & 0 \\ 3 & 1 & 1 & | & 0 & 0 & 1 \end{bmatrix}$$
 $\begin{bmatrix} 1 & 2 & 3 & | & 0 & 1 & 0 \\ 3 & 1 & 1 & | & 0 & 0 & 1 \end{bmatrix}$ 





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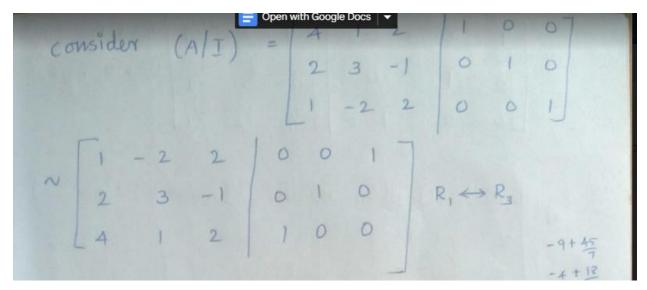
Hence 
$$A^{-1} = \begin{pmatrix} 1/2 & -1/2 & 1/2 \\ -4 & 3 & -1 \\ 5/2 & -3/2 & 1/2 \end{pmatrix}$$
(2) By Gauss - Jordan mulhod, find  $A^{-1}$  if  $A = \begin{pmatrix} 4 & 1 & 2 \\ 2 & 3 & -1 \\ 1 & -2 & 2 \end{pmatrix}$ 

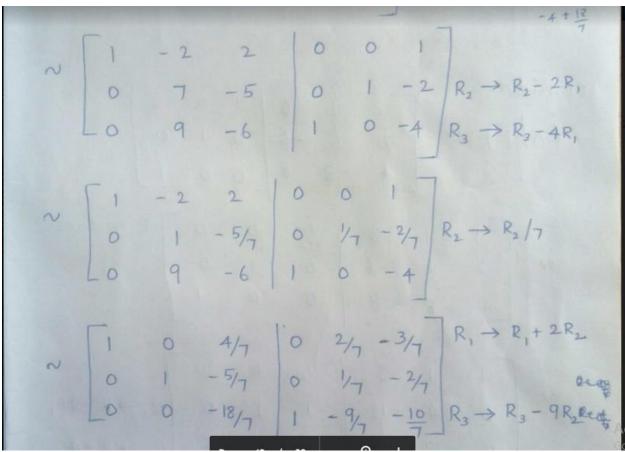


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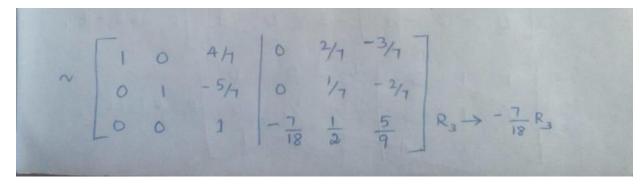


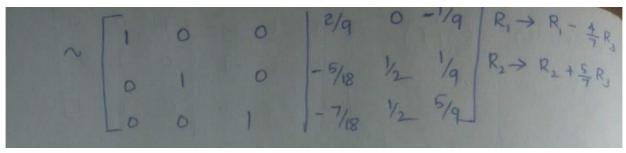


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3) By Gauss-Jordan method, find A if

$$A = \begin{pmatrix} 2 & 2 & 6 \\ 2 & 6 & -6 \\ 4 & -8 & 8 \end{pmatrix}$$
.

Consider

 $(A/I) = \begin{pmatrix} 2 & 2 & 6 & | & 1 & 0 & 0 \\ 2 & 6 & -6 & | & 0 & 1 & 0 \\ 4 & -8 & 8 & | & 0 & 0 & 1 \end{pmatrix}$ 
 $R_1 \rightarrow R_{1/2}$ 
 $R_2 \rightarrow R_{1/2}$ 
 $R_3 \rightarrow R_{1/2}$ 
 $R_4 \rightarrow R_{1/2}$ 
 $R_4 \rightarrow R_{1/2}$ 



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