Subject :
Date

معکوس D است $E=\begin{bmatrix} E_{11} & E_{12} \\ E_{21} & E_{22} \end{bmatrix}$ فرض کنید

$$DE = I \qquad D = \begin{bmatrix} A & B \\ C & I \end{bmatrix}$$

$$\begin{bmatrix} A & B \\ C & I \end{bmatrix}\begin{bmatrix} E_{11} & E_{12} \\ E_{21} & E_{22} \end{bmatrix} = I$$

$$\begin{bmatrix} AE_{11}+BE_{21} & AE_{12}+BE_{22} \\ CE_{11}+E_{21} & CE_{12}+E_{22} \end{bmatrix} = \begin{bmatrix} I_k & 0 \\ 0 & I_k \end{bmatrix}$$

$$AE_{11}+BE_{21} = I_k$$

$$AE_{12}+BE_{22} = 0 \longrightarrow AE_{12} = -BE_{22}$$

$$CE_{11}+E_{21} = 0 \longrightarrow CE_{11} = -E_{21}$$

$$CE_{12}+E_{22} = I_k$$

$$\Longrightarrow AE_{11}+B(-CE_{11}) = I_k$$

$$(A-BC)E_{11} = I_k$$

$$\text{بنابراین} \Rightarrow E_{11} = (A-BC)^{-1}$$

اگر D معکوس پذیر باشد آنگاه $A-BC$ معکوس پذیر است