

Solution (#665) Applying Algorithm 3.84 we see

$$\begin{pmatrix} 0 & 2 & 1 & 0 \\ 3 & 0 & 1 & -1 \\ 1 & 2 & 2 & 0 \\ 2 & 1 & 2 & 0 \end{pmatrix}^{-1} = \begin{pmatrix} 2 & 0 & -3 & 2 \\ 2 & 0 & -2 & 1 \\ -3 & 0 & 4 & -2 \\ 3 & -1 & -5 & 4 \end{pmatrix}$$

The second matrix is singular.

For the third matrix

$$\begin{pmatrix} 1 & 2 & 3 & 0 \\ 3 & 1 & 0 & 2 \\ 1 & 0 & 2 & 3 \\ 3 & 2 & 1 & 0 \end{pmatrix}^{-1} = \frac{1}{12} \begin{pmatrix} -11 & -12 & 8 & 17 \\ 19 & 24 & -16 & -25 \\ -5 & -12 & 8 & 11 \\ 7 & 12 & -4 & -13 \end{pmatrix}.$$