Question

Show that the matrix

$$\begin{pmatrix} a & b & c \\ 0 & d & e \\ 0 & 0 & f \end{pmatrix}$$

is non singular if and only if a, d and f are all non zero.

Write down the inverse in that case. Check your answer by multiplication.

Answer

$\det A = adf \neq 0$ if and only id a, d, f are all $\neq 0$

$$A^{-1} = \frac{1}{adf} \begin{pmatrix} df & -bf & be - cd \\ 0 & af & -ae \\ 0 & 0 & ad \end{pmatrix}$$