Answer and give a short proof: [from Set #10]

(f) If $A$ and $B$ are invertible then so is $AB^{-1}$.
   (T/F) If true what is the inverse of $AB^{-1}$?

(g) If $A$ and $B$ are invertible then so is $A^T B$.
   (T/F) If true what is the inverse of $A^T B$?

Calculate the inverse of the matrix shown on the right

\[ A = \begin{bmatrix} 2 & 2 & -4 \\ -1 & 0 & 2 \\ 1 & 3 & -1 \end{bmatrix} \]

Find the LU factorization of the matrix $A$

Use your answer in (3) to compute $\det(A)$. 

5 Explain with a simple diagram why a linear mapping that is not *one-to-one* cannot be invertible. Same thing for a mapping that is not *onto*.