Math 420/520
Assignment 2g
due September 21, 2001

1. Prove that if $A$ is lower triangular and nonsingular, then $A^{-1}$ is also lower triangular. (I suggest that you let $B = A^{-1}$, write $A$ and $B$ in block form, e.g.

$$
B = \begin{bmatrix}
\hat{B} & c \\
b & b_{mn}
\end{bmatrix}.
$$

Then prove by induction on $n$ that $B$ is lower triangular.)

2. Prove that if $A$ is lower triangular and nonsingular, then the main-diagonal entries of $A^{-1}$ are $1/a_{ii}$, $i = 1, \ldots, n$. Prove that the inverse of a unit-lower-triangular matrix is unit lower triangular.