Georgia Tech School of Mathematics
Math 1502

Calculus II, Section D

Quiz # 9

October 28, 2009

First Name : _____

Last Name : _____

1. Let $A = \begin{bmatrix} 1 & 2 & 4 \\ 2 & 5 & 1 \\ 1 & 1 & 1 \end{bmatrix}$. Find a lower triangular matrix L annd a row-reduced matrix U such that $A = LU$

   (Hint : beware that the record matrix is related to but nor equal to L !!)

   (Give the result here, compute on the back pages)

$L =$ $U =$

2. Let $A = \begin{bmatrix} 1 & 1 & 2 & 1 \\ 2 & 1 & 3 & 2 \\ 1 & 0 & 1 & 1 \\ 3 & 2 & 5 & 3 \end{bmatrix}$.

(a) Find an equation for $\mathrm{Im}(A)$

(Hint : find matrix C such that $A\mathbf{x} = \mathbf{b}$ has a solution if and only if $C\mathbf{b} = 0$)

(Give the result here, compute on the back pages)

$$\mathrm{Im}(A) =$$

(b) Give a one-to-one parametrization of $\mathrm{Im}(A)$

(Give the result here, compute on the back pages)

3. Let $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 2 \\ 1 & 2 & 3 \end{bmatrix}$. Find a lower triangular matrix L such that $A = LL^t$

(Hint : use the Cholesky method) (Give the result here, compute on the back pages)

$$L =$$

Use the space below and the back pages for your calculations

Use this page for your calculations