Georgia Tech School of Mathematics
Math 1502

Calculus II, Section K

Quiz # 11

November 22 2010

First Name : _____

Last Name : _____

All along this quiz A will denote the 3×4 matrix $A = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 1 & 3 & -2 & -1 \\ 1 & -1 & 2 & 3 \end{bmatrix}$.

1. *(3 pts)* By using the Gram-Schmidt procedure on the columns of A, give an orthonormal basis of $\mathrm{Im}(A)$. *(Hint : compute the rank of A first and check that it coincides with the number of elements of this basis)*

(Use this page for your calculations)

2. *(3 pts)* Give the QR factorization $A = Q_c R$. *(Hint : compute the size and the rank of each matrix and check that Q_c is an isometry)*

$Q_c =$

$R =$

3. *(4 pts)* Give the QR factorization of R^t in the form $R^t = Q_r T^t$. Compute T. *(Hint : compute the size and the rank of each matrix and check that Q_r is an isometry)*

$Q_r \ =$

$T \ =$

(Use this page for your calculations)