Georgia Tech   School of Mathematics
                                                                Math 1502

Calculus II, Section K
Quiz # 11
November 19th 2008
20 minutes

First Name : _____

Last Name : _____

1. Let $\mathbf{v} = \begin{bmatrix} 1 \\ -1 \\ 1 \end{bmatrix}$.

   (a) Give the matrix P of the orthogonal projection onto the space spanned by $\mathbf{v}$.

   (Give results here and use the back pages for your calculations)

$$P \; = $$

   (b) Give the matrix $P_\perp$ of the orthogonal projection onto the subspace orthogonal to $\mathbf{v}$.

   (Give results here and use the back pages for your calculations)

$$P_\perp \; = $$

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

(a) Give a basis for $\text{Im}(A)$

(Give results here and use the back pages for your calculations)

(b) Give an orthonormal basis for $\text{Im}(A)$

(Hint : use the Gram-Schmidt procedure)

(Give results here and use the back pages for your calculations)

(c) Give the QR factorization for A

$Q \; =$ $R \; =$

Use this page for your calculations

Use this page for your calculations