

GEORGIA TECH

SCHOOL OF MATHEMATICS

MATH 1502

CALCULUS II, SECTION D

Quiz # 11

November 19th 2008

20 minutes

First Name : -----

Last Name : -----

1. Let $\mathbf{v} = \begin{bmatrix} 3 \\ 0 \\ -4 \end{bmatrix}$.

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

(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

$$Q = \qquad R =$$

Use this page for your calculations

Use this page for your calculations