

GEORGIA TECH

SCHOOL OF MATHEMATICS

MATH 1502 D

CALCULUS II  
Quiz # 10  
November 11th 2009  
15 minutes

First Name : -----

Last Name : -----

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

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

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

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

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

2. Let  $S$  be the set of  $\mathbf{x} \in \mathbb{R}^4$  such that  $x_1 + 3x_2 - 2x_3 = 0$  and  $x_2 - 4x_4 = 0$ .
- (a) Show that  $S$  is a linear space

- (b) Give the dimension of  $S$

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

$$\dim(S) =$$

3. Let  $\mathbf{v}_1 = \begin{bmatrix} 1 \\ 0 \\ 1 \\ 0 \end{bmatrix}$ ,  $\mathbf{v}_2 = \begin{bmatrix} 1 \\ -1 \\ 1 \\ -1 \end{bmatrix}$  and  $\mathbf{v}_3 = \begin{bmatrix} 0 \\ 1 \\ 0 \\ 1 \end{bmatrix}$ . Are they linearly independent?

YES

NO

Justification :

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*Use the bottom of this page and the back pages for your calculations*

*Use this page for your calculations*