

GEORGIA TECH

SCHOOL OF MATHEMATICS

MATH 1502

CALCULUS II, SECTION K

Quiz # 7

October 15th 2008

First Name : -----

Last Name : -----

1. Give an equation for the line passing through the points $\mathbf{p}_0 = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$
and $\mathbf{p}_1 = \begin{bmatrix} 1 \\ -1 \end{bmatrix}$. *(Give results here and use the back pages for your calculations)*

2. Find a one-to-one parametrization for the plane passing through the
points $\mathbf{p}_0 = \begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix}$, $\mathbf{p}_1 = \begin{bmatrix} -1 \\ 1 \\ -1 \end{bmatrix}$ and $\mathbf{p}_2 = \begin{bmatrix} 2 \\ 1 \\ 0 \end{bmatrix}$
(Give results here and use the back pages for your calculations)

3. In this question the image S of the unit circle by the matrix $A = \begin{bmatrix} 3 & -1 \\ -1 & 3 \end{bmatrix}$ will be studied.

(a) Give the equation of S

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

(b) Compute the maximum distance of a point of S to the origin.

(Hint : write $x_1 = \cos t, x_2 = \sin t$ for the components of a vector \mathbf{x} , compute the vector $A\mathbf{x}$ and compute the square of its length, then maximize over t .)

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

Maximal length =

4. Give the augmented matrix of the following system of linear equations :

$$\begin{aligned}x_1 - x_2 + x_3 - x_4 &= 0 \\2x_1 - 2x_2 + 3x_3 + x_4 &= 1 \\-x_1 + x_2 + 4x_3 + 5x_4 &= 6 \\3x_1 - 3x_2 + 2x_3 &= 0\end{aligned}$$

$$[A|b] =$$

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

Use this page for your calculations