GEORGIA TECH   SCHOOL OF MATHEMATICS

CALCULUS II, SECTION D
Quiz # 12
November 24th 2008
20 minutes

First Name : _____

Last Name : _____

1. Compute the determinant of $A = \begin{bmatrix} 3 & 1 & 0 & 0 \\ 1 & 3 & 1 & 0 \\ 0 & 1 & 3 & 1 \\ 0 & 0 & 1 & 3 \end{bmatrix}$.

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

$$\det(A) \ =$$

2. **Without using row reduction**, compute the determinant of
$B = \begin{bmatrix} 3 & 1 & -1 & 2 \\ 1 & 3 & 1 & 4 \\ 0 & 0 & 3 & 1 \\ 0 & 0 & 1 & 3 \end{bmatrix}$.   *(Give results here and use the back pages for your calculations)*

$$\det(B) \ =$$

3. Compute the area of the interior $\mathcal{E}$ of the ellipse given by the equation $(u - v)^2 + (3v - u)^2 = 1$. *(Hint : see $\mathcal{E}$ as the image of the unit disk by some matrix)*

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

   $$\mathrm{Area}(\mathcal{E}) \; =$$

4. Find the volume of the parallelepiped P spanned by the vectors
   $$\mathbf{v}_1 = \begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix}, \; \mathbf{v}_2 = \begin{bmatrix} 2 \\ 0 \\ -1 \end{bmatrix}, \; \mathbf{v}_1 = \begin{bmatrix} 0 \\ -3 \\ -2 \end{bmatrix}.$$
   (Give results here and use the back pages for your calculations)

   $$\mathrm{Vol}(P) \; =$$

   .

5. Compute the cross product of $\mathbf{a} = \begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix}$, and $\mathbf{b} \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$.

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

   $$\mathbf{a} \times \mathbf{b} \; =$$

Use this page for your calculations

Use this page for your calculations