Georgia Tech   School of Mathematics
                                                                                        Math 1502

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Calculus II, Section K
Quiz # 12
November 24th 2008
20 minutes

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First Name : _____

Last Name : _____

1. Compute the determinant of $A = \begin{bmatrix} -2 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 \\ 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & -2 \end{bmatrix}$.

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

$$\det(A) \;=$$

2. **Without using row reduction**, compute the determinant of

$B = \begin{bmatrix} -2 & 1 & -1 & 9 \\ 1 & -3 & 1 & 5 \\ 0 & 0 & -1 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}.$ *(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 $(5u - v)^2 + (v + u)^2 = 1$. *(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)

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

4. Find the volume of the parallelepiped P spanned by the vectors

$$\mathbf{v}_1 = \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix}, \; \mathbf{v}_2 = \begin{bmatrix} 0 \\ 1 \\ -1 \end{bmatrix}, \; \mathbf{v}_1 = \begin{bmatrix} 1 \\ 2 \\ 2 \end{bmatrix}.$$

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

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

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

   (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