MATH 2270
Quiz #2 - Fall 2008

Name: _____

1. (5 points) Let $T : \mathbb{R}^2 \to \mathbb{R}^2$ be the linear transformation given by rotating a vector $\vec{x} \in \mathbb{R}^2$ *clockwise* by 90 degrees. Then T can be written as

$$T(\vec{x}) = A\vec{x}$$

for some matrix A.

(a) Compute the matrix A.

(b) Is T injective (i.e. 1-1)?

(c) Is T surjective (i.e. onto)?

(d) Is T invertible?

2. (2 points) Write the vector $\begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$ as a linear combination of the standard vectors $\vec{e}_1, \vec{e}_2, \vec{e}_3$.

3. (4 points) Compute the inverse of the following matrix using Gauss-Jordan elimination. Show your work.

$$\begin{pmatrix} 1 & 1 \\ 1 & 2 \end{pmatrix}.$$