MATH221
quiz #2, 03/24/20
Solutions
Total 100

<u>Show all work legibly</u>.   **Name**:_____

1. (20) Let $A = \begin{bmatrix} 2 & -2 \\ -2 & 3 \end{bmatrix}$, and $B = \begin{bmatrix} 3 & 2 \\ 2 & 2 \end{bmatrix}$. Compute AB.

$AB =$

2. (40) Let $A = \begin{bmatrix} 2 & -2 \\ -2 & 3 \end{bmatrix}$.

    (a) (20) Find A^{-1} if exists.

$A^{-1} =$

(b) (20) Solve the matrix system of equations $AX = B$ where $B = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$.

$X =$

3. (20) Let A be an invertible matrix. True or False? If $\{A\mathbf{u}_1, \ldots, A\mathbf{u}_n\}$ is a linearly independent set, then the vector set $\{\mathbf{u}_1, \ldots, \mathbf{u}_n\}$ is linearly independent.

Mark one and explain.
□ True □ False

4. (20) Let $A = [\mathbf{a}_1, \mathbf{a}_2, \mathbf{a}_3]$ be a 2×3 matrix. True or False? If columns of A are linearly independent, then the system $A\mathbf{x} = \mathbf{b}$ is consistent for each $\mathbf{b}$.

Mark one and explain.
  ☐ True   ☐ False

5. (20) Let A be an $n \times n$ invertible matrix. True or False? If B is an $n \times n$ matrix, and AB is invertible, then B is invertible.

Mark one and explain.
  □ True   □ False