MATH 304-01: LINEAR ALGEBRA-FALL 2019 **Quiz ♯6**

Name (Print): _____

Problem 1 Circle the correct answer:

1. True/False $H = \{ \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \in \mathbb{R}^3 : x_1 - x_2 + x_3 = 0\}$ is a subspace of $\mathbb{R}^3$.
2. True/False $\{\mathbf{0}\}$ is a subspace of $\mathbb{R}^n$, where $\mathbf{0}$ is the zero vector of $\mathbb{R}^n$.
3. True/False Let $A = \begin{pmatrix} 2 & -2 & -2 \\ 1 & 2 & -1 \end{pmatrix}$. Then $p = \begin{bmatrix} 1 \\ -1 \\ 2 \end{bmatrix}$ is in Nul$A$.
4. True/False Let $v_1 = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$and $v_2 = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$. Then $\{v_1, v_2\}$ is a basis for $\mathbb{R}^2$

Problem 2 Let

$$A = \begin{pmatrix} 1 & 0 & 3 & -2 \\ -1 & 3 & 2 & 2 \\ 1 & 3 & 8 & -2 \end{pmatrix}.$$

1. Find the RREF of A.
2. Determine the pivot columns of A.
3. Find Rank$A$, the rank of the matrix A.
4. Find a basis for Nul$A$.
5. Find a basis for Col$A$.
6. Verify the Rank Theorem for the matrix A.