Quiz 1

Name: Solutions Score: _____

1. Find the general solution to the system of linear equations or write that there is no solution if the system is inconsistent:

$$\begin{aligned} 5x_1 + 2x_2 &= 1 \\ x_1 + x_2 &= 1 \\ 3x_1 + 2x_2 &= 3 \end{aligned}$$

RREF: identity, inconsistent

Solutions: _____

2. Multiply the matrices A and B to find AB or write that it is impossible to multiply them.

$$A = \begin{bmatrix} -2 & -1 \\ 2 & -2 \\ 3 & 5 \end{bmatrix} \qquad B = \begin{bmatrix} -4 & 3 \\ 2 & -2 \end{bmatrix}$$

Solution:

$$AB = \begin{bmatrix} 6 & -4 \\ -12 & 10 \\ -2 & -1 \end{bmatrix}$$

$$AB = \begin{bmatrix} \_\_\_\_\_ & \_\_\_\_\_ \\ \_\_\_\_\_ & \_\_\_\_\_ \\ \_\_\_\_\_ & \_\_\_\_\_ \end{bmatrix}$$

3. Is the vector

$$\vec{b} = \begin{bmatrix} 12 \\ -8 \\ -15 \end{bmatrix}$$

in the span of the vectors

$$\begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 3 \\ 0 \\ 3 \end{bmatrix}, \begin{bmatrix} -1 \\ 1 \\ 3 \end{bmatrix}, \begin{bmatrix} 3 \\ -2 \\ -4 \end{bmatrix}?$$

If so, find *one* linear combination of these vectors that gives $\vec{b}$. (Hint: Put the augmented matrix given by the vectors and $\vec{b}$ in RREF.) Yes. RREF:

[1, 3, 0, 0, -1],

[0, 0, 1, 0, 2],

[0, 0, 0, 1, 5]

Answer: _____

Linear Combination: _____