Quiz1

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Linear Algebra Quiz 1
No notes, books or electronic devices Your Name

1. (10 points). The system with augmented matrix:

$$\begin{bmatrix} 1 & 0 & 2 & 1 \\ 2 & 1 & 3 & 2 \\ 3 & 1 & 5 & -2 \end{bmatrix}$$

is CONSISTENT.

True **False**

2. (10 points) The vector $\mathbf{y} = \begin{bmatrix} 1 \\ 1 \\ 2 \end{bmatrix}$ is in $Span\left\{\begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix}, \begin{bmatrix} 3 \\ -1 \\ 5 \end{bmatrix}\right\}$.

True **False**

bc $\begin{bmatrix} 1 & 3 & 1 \\ 1 & -1 & 1 \\ -1 & 5 & 2 \end{bmatrix}$ is inconsistent

$$\begin{bmatrix} 1 & 0 & 2 & 1 \\ 2 & 1 & 3 & 2 \\ 3 & 1 & 5 & -2 \end{bmatrix}$$

$R_2 = R_2 - 2R_1$

$$\begin{bmatrix} 1 & 0 & 2 & 1 \\ 0 & 1 & -1 & 0 \\ 3 & 1 & 5 & -2 \end{bmatrix}$$

$R_3 = R_3 - 3R_1$

$$\begin{bmatrix} 1 & 0 & 2 & 1 \\ 0 & 1 & -1 & 0 \\ 0 & 1 & -1 & -5 \end{bmatrix}$$

$R_3 = R_3 - R_2$

$$\begin{bmatrix} 1 & 0 & 2 & 1 \\ 0 & 1 & -1 & 0 \\ 0 & 0 & 0 & -5 \end{bmatrix}$$

Result is inconsistent

2. (10 points) The vector $\mathbf{y} = \begin{bmatrix} 1 \\ 1 \\ 2 \end{bmatrix}$ is in $Span\left\{\begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix}, \begin{bmatrix} 3 \\ -1 \\ 5 \end{bmatrix}\right\}$.

$$\begin{bmatrix} 1 & 3 & 1 \\ 1 & -1 & 1 \\ -1 & 5 & 2 \end{bmatrix}$$

$R_2 = R_2 - R_1$

$$\begin{bmatrix} 1 & 3 & 1 \\ 0 & -4 & 0 \\ -1 & 5 & 2 \end{bmatrix}$$

$R_3 = R_3 + R_1$

$$\begin{bmatrix} 1 & 3 & 1 \\ 0 & -4 & 0 \\ 0 & 8 & 3 \end{bmatrix}$$

$R_3 = R_3 + 2R_2$

$$\begin{bmatrix} 1 & 3 & 1 \\ 0 & -4 & 0 \\ 0 & 0 & 3 \end{bmatrix}$$

vector y is not in the span of $\left\{ \begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix} \begin{bmatrix} 3 \\ -1 \\ 5 \end{bmatrix} \right\}$

bc it is not a solution