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Math 2250, Fall 2008, Quiz 2
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1. Write in matrix form

$$\begin{aligned}x &= 2u + 3v + w \\y &= 3u + 7v + 13w\end{aligned}$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2 & 3 & 1 \\ 3 & 7 & 13 \end{bmatrix} \begin{bmatrix} u \\ v \\ w \end{bmatrix}$$

2. Write the matrix for the linear transformation $A: \mathbb{R}^2 \rightarrow \mathbb{R}^3$ which sends

$$\begin{bmatrix} 1 \\ 0 \end{bmatrix} \text{ to } \begin{bmatrix} 10 \\ 7 \\ 2 \end{bmatrix} \text{ and } \begin{bmatrix} 0 \\ 1 \end{bmatrix} \text{ to } \begin{bmatrix} 3 \\ 5 \\ 9 \end{bmatrix}. \quad A = \begin{bmatrix} 10 & 3 \\ 7 & 5 \\ 2 & 9 \end{bmatrix}$$

3. Compute $\begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix} + \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} 2 & 3 \\ 2 & 5 \end{bmatrix}$

4. Compute $\begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} 4 & 6 \\ 2 & 2 \end{bmatrix}$

5. Compute $\begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ -1 & 0 & 0 \end{bmatrix} \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix} = \begin{bmatrix} 5 & 6 \\ 3 & 4 \\ -1 & -2 \end{bmatrix}$