

Quiz 4, Linear

Name: _____

1. (3 points) Show that the transformation T defined by $T(x_1, x_2) = (2x_1 - 3x_2, x_1 + 4, 5x_2)$ is not linear.

2. (3 points) Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^2$ have standard matrix $A = \begin{bmatrix} 1 & -5 & 4 \\ 0 & 1 & -6 \end{bmatrix}$. Is T one-to-one? Onto?
Make sure you (briefly) justify your answer.

3. (4 points) Let $A = \begin{bmatrix} 2 & 5 \\ -3 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 8 & -10 \\ 6 & k \end{bmatrix}$. What value(s) of k , if any, will make $AB = BA$? Justify your answer.