Quiz 8

Name:

---

1. Define the homomorphism $T\colon \mathbb{R}^3 \longrightarrow \mathbb{R}^2$ by

$$T\begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 2y+z \\ x-4y \end{pmatrix} .$$

(a) Is T an isomorphism? Briefly justify your answer.

(b) Compute the matrix representation of T relative to the canonical bases of $\mathbb{R}^3$ and $\mathbb{R}^2$.

(c) Use the matrix representation you just found to compute $T\begin{pmatrix} 3 \\ -1 \\ 2 \end{pmatrix}$.