

Last name:

First name:

Recommended problems - *Please do NOT turn these in:*

- §5.1: 1, 5, 9, 15, 25, 29.

Submitted problems: *Please turn these problems in:*

- (1) Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^2$ where $T(x, y, z) = (2y, x + y + z)$.
 - (a) Is T a one-to-one transformation? Explain.
 - (b) Prove that the range of T is \mathbb{R}^2 .
 - (c) Give an example of a nonzero vector (x, y, z) where $T(x, y, z) = (0, 0)$.
- (2) Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ where $T(x, y, z) = (x - 2z, y + z, x + 2y)$. Is T a one-to-one transformation? Is the range of T \mathbb{R}^3 ? Explain.
- (3) §5.1, problem 16 on page 227.
- (4) Let V be a vector space and $W = v_1, \dots, v_n$. Prove that $\text{span}(W)$ is a subspace of V .