

Math 260 Quiz 1 Name:.....ID:.....

**Problem:**

Let  $S$  be the solution set of the system

$$\begin{cases} x_1 + x_2 - x_3 = 0 \\ 2x_1 - x_3 = 0 \end{cases}$$

(1) Show that  $S$  is a vector space.

Hint: Show it is a sub-space of  $\mathbb{R}^3$ , thus it is a vector space.

(2) Find a basis of  $S$  and the dimension of  $S$ .