

1. Show that  $V = \{(x, y, z) \in \mathbb{R}^3 \mid 3x + 4y = 5z\}$  is a subspace of  $\mathbb{R}^3$ .

2. Find the dimension of the solution space of the system 
$$\begin{cases} x - 3y + 2z = 0 \\ y + 4z = 0 \\ 2x - 9y - 8z = 0 \end{cases}$$