Name:

Problem 1: Find a set that spans the subspace

$$\left\{ \begin{pmatrix} x \\ y \\ z \\ w \end{pmatrix} : 2x + y + w = 0 \text{ and } y + 2z = 0 \right\}$$

of $\mathbb{R}^4$.

Hint: Start with solving the system of two equations $2x + y + w = 0$ and $y + 2z = 0$.