

MATH 215
Practice

Determine whether or not the following are subspaces.

1. $H = \left\{ \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} \mid x_3 = x_2 + x_1 \right\} \in \mathbb{R}^3$

2. $H = \left\{ \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} \mid x_1 + x_3 = 1 \right\} \in \mathbb{R}^3$

3. $H = \left\{ \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} \mid x_1 = 5x_2 \right\} \in \mathbb{R}^2$

4. $H = \left\{ \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} \mid x_1 = |x_2| \right\} \in \mathbb{R}^2$

5. $H = \left\{ p(t) = t^2 + a_0 \mid a_0 \in \mathbb{R} \right\} \in \mathbb{P}_2$