Introduction to vectors

In calc

$$\vec{x} = \langle a, b \rangle \quad \text{or} \quad \vec{x} = \langle a, b, c \rangle$$

In LA

$$x = \begin{bmatrix} a \\ b \end{bmatrix} \quad \text{or} \quad x = \begin{bmatrix} a \\ b \\ c \end{bmatrix}$$

Interpret the subset W of $\mathbb{R}^n$ geometrically by sketching a graph for W.

ex 1: $W = \left\{ x \mid x = \begin{bmatrix} a \\ b \end{bmatrix} \text{ and } a + b = 1 \right\}$

ex 2: $W = \left\{ w \mid w = \begin{bmatrix} c \\ d \end{bmatrix} \text{ and } c + d \geq 0 \right\}$

ex 3: $W = \left\{ w \mid w = \begin{bmatrix} a \\ b \\ c \end{bmatrix} \text{ and } a^2 + b^2 + c^2 = 1 \text{ for } c \geq 0 \right\}$

Q: What ops can we perform on vectors in W & remain in W?

$+$, $\times$, mult by scalar?