Home assignment 1

Task 1.

Three vectors are given:

$$\mathbf{a} = \begin{bmatrix} 2 \\ x \end{bmatrix}, \mathbf{b} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}, \mathbf{c} = \begin{bmatrix} x \\ 3 \end{bmatrix}$$

Find x such that $\mathbf{v} = \mathbf{a} - \mathbf{b} + \mathbf{c}$, $||\mathbf{v}|| = \sqrt{13}$.

Answer.

$x = \{1, -4\}$.

Task 2.

Find such x that $\mathbf{a} = \begin{bmatrix} 1 \\ x \\ 3 \end{bmatrix}, \mathbf{b} = \begin{bmatrix} 2 \\ 1 \\ 1 \end{bmatrix}, \mathbf{c} = \begin{bmatrix} 3 \\ 2 \\ 4 \end{bmatrix}$ form a basis in $\mathbb{R}^3$.

Answer.

$x \in \mathbb{R} \backslash \{1\}$.