1. True or False?

The vector from $\begin{pmatrix} 0 \\ 2 \end{pmatrix}$ to $\begin{pmatrix} -1 \\ 1 \end{pmatrix}$ is equal to the vector from $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$ to $\begin{pmatrix} 0 \\ -2 \end{pmatrix}$.
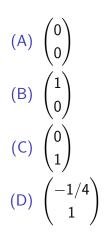
2. Which of the following vectors is the shortest?

(A) $(2, 1, 1)$

(B) $(-3, 1, 1)$

(C) $(1, 0, -4)$

3. Which of the following vectors is furthest from $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$?

(A) $\begin{pmatrix} 0 \\ 0 \end{pmatrix}$

(B) $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$

(C) $\begin{pmatrix} 0 \\ 1 \end{pmatrix}$

(D) $\begin{pmatrix} -1/4 \\ 1 \end{pmatrix}$

4. True or False?

There is exactly one value of k such that the following two vectors in $\mathbb{R}^2$ are perpendicular.

$$\begin{pmatrix} k \\ 2 \end{pmatrix} \quad \begin{pmatrix} -1 \\ 5 \end{pmatrix}$$

5. True or False?

There exists a vector in $\mathbb{R}^2$ which is perpendicular to the vector

$$\begin{pmatrix} k \\ 2 \end{pmatrix}$$

for two or more distinct values of k.