1. Is the set $W$ of $2 \times 2$ symmetric matrices a subspace of the vector space $V$ of all $2 \times 2$ matrices?

(Recall that a matrix $A$ is symmetric if and only if $A^T = A$. Equivalently, a symmetric $2 \times 2$ matrix is of the form $\begin{bmatrix} a & b \\ b & c \end{bmatrix}$.)
2. Let \( B = \left\{ \begin{bmatrix} 1 \\ -4 \end{bmatrix}, \begin{bmatrix} 2 \\ -3 \end{bmatrix} \right\} \) be a basis of \( \mathbb{R}^2 \).

a. Calculate the change-of-coordinates matrix \( P_B \) from \( B \) to the standard basis of \( \mathbb{R}^2 \).

b. Use part a. to calculate \( [x]_B \) given \( x = \begin{bmatrix} -1 \\ -6 \end{bmatrix} \).