WORKSHEET 2/16/23
MATH 2331, SPRING 2023

(1) Suppose that $\mathfrak{B} = \{\vec{v}_1, \vec{v}_2, \vec{v}_3\}$ is a basis for $\mathbb{R}^3$. What is $[\vec{v}_2]_{\mathfrak{B}}$?

(2) Suppose that $A = S^{-1}BS$. Are A and B similar?

(3) Suppose that T is a linear transformation with matrix A, and that $A = SBS^{-1}$. In which basis does B represent T?

(4) Describe the columns of $[T]_{\mathfrak{B}}$.

(5) Is there a basis for $\mathbb{R}^2$ in which reflection over the line L is represented by a diagonal matrix?

(6) Is there a basis for $\mathbb{R}^2$ in which a 90 degree rotation is represented by a diagonal matrix?