Name _____ Quiz 3

1) Suppose A is a 5×5 matrix and $\vec{v}$ & $\vec{w}$ distinct 5×1 vectors. If both $\vec{v}$ and $\vec{w}$ are solutions to $A\vec{x} = \vec{0}$, how is the largest possible value for $\mathrm{rank}(A)$?

In $\mathbb{R}^3$, define the two bases below.

$$B_1 = \left\{\begin{bmatrix}1\\2\\3\end{bmatrix}, \begin{bmatrix}7\\8\\2\end{bmatrix}, \begin{bmatrix}0\\3\\4\end{bmatrix}\right\};\ B_2 = \left\{\begin{bmatrix}1\\-1\\0\end{bmatrix}, \begin{bmatrix}-2\\3\\1\end{bmatrix}, \begin{bmatrix}0\\1\\-1\end{bmatrix}\right\}$$

2) Given the vector $[\vec{x}]_{B_1} = \begin{bmatrix}2\\3\\4\end{bmatrix}$, find $[\vec{x}]_S$

3) Given the vector $[\vec{x}]_{B_2} = \begin{bmatrix}1\\3\\4\end{bmatrix}$, find $[\vec{x}]_{B_1}$