1. Consider the vectors $\vec{a} = \begin{bmatrix} 3 \\ 1 \end{bmatrix}$ and $\vec{b} = \begin{bmatrix} -2 \\ 0 \end{bmatrix}$.
   a. Compute $2\vec{a} + \vec{b}$ algebraically.
   b. On the $xy$-plane, draw a geometric representation of $2\vec{a} + \vec{b}$.

2. Let $A = \begin{bmatrix} 2 & 3 & -4 \\ 7 & 0 & 2 \\ -1 & 6 & 4 \end{bmatrix}$.
   a. Express $A\vec{x}$ as a linear combination of the column vectors of $A$.
   b. Find $\|\vec{c}_3\|$.
   c. Classify the angle between $\vec{c}_1$ and $\vec{c}_2$ as acute, obtuse, or right.

3. Let $A$ be a $4 \times 2$ matrix, and let $T : \mathbb{R}^2 \rightarrow \mathbb{R}^3$ such that $T(\vec{x}) = \begin{bmatrix} 3x_1 - x_2 \\ 4x_2 \\ -2x_1 + 7x_2 \end{bmatrix}$.
   a. Multiplication of a vector by $A$ defines a transformation from ______ to ______.
   b. Find the standard matrix associated with $T$. 