Quiz 2 / MAC 2313 / Spring 2025
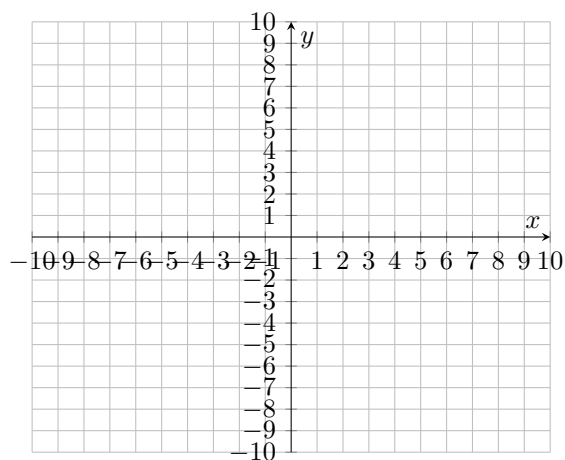
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1 For 1-5, let $\vec{u}$ be the standard position vector terminating at (5,-7)

1.1 Draw $\vec{u}$ on the axis provided. (ONLY $\vec{u}$)

1.2 Find the magnitude of $\vec{u}$ (Show appropriate work.)

1.3 The unit vector in the direction of $\vec{u}$ is $\_\_\_ \hat{i} + \_\_\_ \hat{j}$.

1.4 Suppose $\vec{v}$ initiates at (-1,2) and is EQUIVALENT to $\vec{u}$, then $\vec{v}$ terminates at ($\_\_\_$, $\_\_\_$)

1.5 $\vec{u}$ - $\vec{v}$ = $\_\_\_$ (Give your answer in component form.)

2   **For 6-9, let $\vec{a} = \hat{i} + 3\hat{j} - \hat{k}$ and $\vec{b} = 2\hat{i} + \hat{j}$.**
Show all appropriate work.

2.1 $\vec{a} \cdot \vec{b} = \underline{}$

2.2   **Find the angle between $\vec{a}$ and $\vec{b}$.**

2.3   **Find the scalar projection of $\vec{b}$ onto $\vec{a}$.**

2.4   **Find the vector projection of $\vec{b}$ onto $\vec{a}$.**