MATH 251: Quiz 1

January 29, 2015
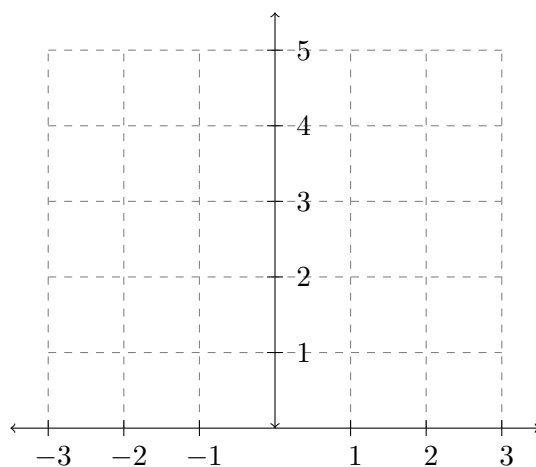
Name: _____ Sec: _____

1. Find the components of the vector $\vec{u}$ that has base point $(1, -8, 2)$ and terminal point $(5, 0, 4)$.

2. Given vectors $\vec{v} = \langle 1, 3 \rangle$ and $\vec{w} = \langle -2, 2 \rangle$, compute the following:

(a) $4\vec{v} - 2\vec{w}$

(b) $e_{\vec{v}}$, where this denotes the unit vector in the same direction as $\vec{v}$.

(c) On the axes below, draw a parallelogram to represent $\vec{v} + \vec{w}$. There should be at least three arrows on your picture.

3. Determine whether the lines $\vec{r_1}$ and $\vec{r_2}$ intersect, where

$$\vec{r_1}(t) = \langle -3 + t, -5 + 3t, -t \rangle \qquad \vec{r_2}(t) = \langle 2 + 2t, -1 - 5t, -3 \rangle.$$

If they do, find the point of intersection. If they do not, state this.