

Name:  
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MAC 2313.3122  
Cyr

Quiz 1

You must show all work to receive full credit!!

**Problem 1.** (4 pts) Let  $\vec{v} = \langle 2, -4, 7 \rangle$ .

(a) Find the unit vector  $\vec{u}$  which points in the same direction as  $\vec{v}$ .

(b) Write the vector equation of the line passing through  $(-5, 6, 1)$  with direction vector  $\vec{v}$ .

**Problem 2.** (6 pts) Find the orthogonal decomposition of  $\vec{u} = \langle 4, -1, 5 \rangle$  with respect to  $\vec{v} = \langle 2, 1, 1 \rangle$ . (That is, write  $\vec{u}$  as a sum of two vectors, one parallel to  $\vec{v}$  and the other orthogonal to  $\vec{v}$ .)