Math 173 - Quiz 1

Name _____

January 17, 2019

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (4 points) Think about the vector $\vec{u}$ from the point $P = (-3, 2)$ to the point $Q = (-4, -5)$.

   (a) Find the component form of $\vec{u}$.

   (b) What angle does $\vec{u}$ make with the positive x-axis?

   (c) Compute $\|\vec{u}\|$.

   (d) Determine a vector of magnitude 5 whose direction is opposite that of $\vec{u}$.

Turn over.

2. (2 points) Let $\vec{u} = 2\hat{\imath} - 3\hat{\jmath}$ and let $\vec{v}$ be the 2D vector of magnitude 4 that makes a 150° angle with the positive x-axis. Compute $2\vec{u} + \vec{v}$ and then find its magnitude.

3. (2 points) Find a unit vector that is parallel to the graph of $y = \sqrt{x^2 + 1}$ at the point where $x = 2$. (Parallel to the graph means parallel to the tangent line.)

4. (2 points) Determine a vector of magnitude 2 that is parallel to $\vec{w} = \hat{\imath} + 3\hat{\jmath} - 5\hat{k}$.