MATH 202 Name: _____

Quiz 1 January 22, 2020

Instructions: Five points total. Problem 2b is worth two points.

1. An object is located at the point $P(3, -1, 0)$, but is constrained so that it can only move in the straight-line direction toward the point $Q(2, 1, 1)$.

   (a) Give, in coordinate form, a vector $\mathbf{v}$ representing the direction in which the object can move.

   $\mathbf{v} =$ _____

   (b) Give, in coordinate form, a *unit* vector $\mathbf{u}$ pointing in the direction that the object can move.

   $\mathbf{u} =$ _____

2. (a) Determine if the vectors $\mathbf{v}_1 = (-1, 3, 7)$ and $\mathbf{v}_2 = (-2, -3, 1)$ are perpendicular.

   (b) Find a vector $\mathbf{a}$ that is perpendicular to the plane containing the vectors $\mathbf{v_1}$ and $\mathbf{v_2}$.

   $\mathbf{a} =$ _____