Math 233 - Homework 1

Name _____

February 4, 2021

Score _____

The following problems are from the suggested homework. Show all work to receive full credit. Supply explanations when necessary. This assignment is due on February 11.

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1. (2 points) Find a vector of magnitude 10 that has the direction of $\vec{v} = \langle 7, -1, 3 \rangle$.

2. (2 points) Let $\vec{u} = 3\hat{\imath} + 2\hat{k}$ and $\vec{v} = 2\hat{\jmath} + 4\hat{k}$. Find the projection of $\vec{v}$ onto $\vec{u}$.

3. (2 points) Find the distance between the point $A\,(-3,1,1)$ and the line with symmetric equations $x = -y = -z$.

4. (2 points) Show that the line passing through the points $P\,(3,1,0)$ and $Q\,(1,4,-3)$ is perpendicular to the line with parametric equations $x = 3t$, $y = 3+8t$, and $z = -7+6t$.

5. (2 points) Rewrite the equation in standard form and identify the quadric surface.

   (a) $6x = 3y^2 + 2z^2$

   (b) $-x^2 + 36y^2 + 36z^2 = 9$