

Math 233 - Homework 1

September 9, 2021

Name _____

Score _____

The following problems are from the suggested homework. Show all work to receive full credit. Supply explanations when necessary. This assignment is due September 14.

1. (2 points) Determine the measure of angle A in triangle ABC , where $A(1, 1, 8)$, $B(4, -3, -4)$, and $C(-3, 1, 5)$. Write your final answer in degrees, rounded to the nearest hundredth.

2. (2 points) Determine the real number α such that $\vec{u} \times \vec{v}$ and \hat{i} are orthogonal, where $\vec{u} = 3\hat{i} + \hat{j} - 5\hat{k}$ and $\vec{v} = 4\hat{i} - 2\hat{j} + \alpha\hat{k}$.

Turn over.

3. (2 points) Find the volume of the parallelepiped determined by $\vec{u} = \hat{i} + \hat{j}$, $\vec{v} = \hat{j} + \hat{k}$, and $\vec{w} = \hat{i} + \hat{k}$.

4. (2 points) Find the distance between the point $A(-3, 1, 1)$ and the line with symmetric equations $x = -y = -z$.

5. (2 points) Find the measure of the acute angle between the planes described by $x + y + z = 0$ and $2x - y + z - 7 = 0$.