

Quiz 8

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. §3.2 #15 (3 marks) Suppose that a vector \vec{a} in the xy -plane has a length of 9 units and points in a direction that is 120° counterclockwise from the positive x -axis, and a vector \vec{b} in that plane has a length of 5 units and points in the positive y -direction. Find $\vec{a} \cdot \vec{b}$.

Question 2. §3.3 # 29 (5 marks) Using projections find the distance between the point and the line. $(-3, 1)$; $4x + 3y + 4 = 0$

Question 3. # 4.5.15 (2 marks) Given the plane $2x_1 - x_2 + 3x_3 = 5$, and the line $\vec{x} = (3, 0, 4) + t(-1, 1, 1)$, $t \in \mathbb{R}$, determine if the line is parallel to the plane, orthogonal to the plane, or neither parallel nor orthogonal. If the answer is “neither”, determine the angle between the direction vector of the line and the normal vector of the plane.