

Quiz 3 Calculus III Fall 2015

Names:.....

Solve the following problems. Each problem is worth 5 points. Show work and explain.

This is a group quiz: feel free to sit with your group mates and work together, or form an impromptu group. You will turn in one paper with all group members names on it.

Q1. Consider the vectors $\vec{a} = 4\vec{i} - 3\vec{j} + \vec{k}$ and $\vec{b} = 2\vec{j} - \vec{k}$.

a. Find the angle between \vec{a} and \vec{b} .

b. Find a third, non-zero vector \vec{c} that is perpendicular to each of \vec{a} and \vec{b} .

c. Find the area of the triangle determined by \vec{a} and \vec{b} .

Q2. (a) Find parametric equations and symmetric equations for the line that goes through $(1, -1, 4)$ and is parallel to the line $x - 3 = \frac{1}{3}y = \frac{z - 3}{4}$.

(b) Find the scalar equation of the plane that goes through $(1, 5, 1)$ and is parallel to the plane $x + 4y + z = 3$.