Math 43 Quiz 7
Wed Nov 26, 2014

NAME YOU ASKED TO BE CALLED IN CLASS: _____

SCORE: _____ / 30 POINTS

THIS QUIZ IS DUE ON MON DEC 1, 2014 @ 9:30am SHARP (NO LATES ACCEPTED).
YOU WILL SCORE 0 POINTS AFTER THAT TIME.
YOU MAY E-MAIL ME A CLEAR READABLE SCAN OR PHOTO OF THE COMPLETED QUIZ NO LATER THAN SUN NOV 30.

- **Sign below to confirm that the work shown on this quiz is strictly your own work.**
- **You may have consulted your textbook, your notes and the class handouts, and used your calculator,**
- **but you did NOT consult other people, websites, software or any other sources of help.**

SIGNATURE: _____

Let P be the point $(-6, 1, -3)$. Let Q be the point $(-3, -7, 5)$. Let R be the point $(-4, -3, 2)$.
Let $\vec{u}$ be the vector with initial point P and terminal point Q.
Let $\vec{w}$ be the vector with initial point P and terminal point R.
Let $\vec{t} = 3\vec{j} - 7\vec{k}$.

[a] Write $3\vec{w} - 2\vec{u}$ as a linear combination of $\vec{i}$, $\vec{j}$ and $\vec{k}$.

[b] Find a vector of magnitude 5 perpendicular to both $\vec{u}$ and $\vec{w}$. (Do **NOT** use decimal approximations.)

[c] Find **symmetric** equations for the line which passes through P and is also perpendicular to the plane $4x - 7z = 9$.

[d] Find the **general** equation of the plane which passes through P, Q and R.

ADDITIONAL QUESTIONS ON OTHER SIDE ➡

[e] A force represented by the vector $4\vec{j} - 5\vec{k}$ moves an object from P to R. Find the work done.

[f] Find the area of triangle PQR. (Do **NOT** use decimal approximations.)

[g] Write $4\vec{i} - 7\vec{k}$ as the sum of 2 vectors, one parallel to $\vec{w}$ and one perpendicular to $\vec{w}$. (Do **NOT** use decimal approximations.)

[h] Find the volume of the parallelepiped with vectors $\vec{u}$, $\vec{w}$ and $\vec{t}$ as adjacent edges.

[i] If the points P, Q and $(1, a, b)$ are collinear, find the values of a and b.

[j] If $\|\vec{v}\| = 5$, and the angle between $\vec{w}$ and $\vec{v}$ is $\frac{2\pi}{3}$ radians, find the magnitude of $\vec{w} \times \vec{v}$. (Do **NOT** use decimal approximations.)

[k] Find **parametric** equations for the line which passes through Q and is also parallel to the line $\frac{1-y}{3} = -z = \frac{x+6}{4}$.