1.(1 pt) You are looking down at a map. A vector $\mathbf{u}$ with $|\mathbf{u}| = 9$ points north and a vector $\mathbf{v}$ with $|\mathbf{v}| = 9$ points northeast. The crossproduct $\mathbf{u} \times \mathbf{v}$ points:

A) south
B) northwest
C) up
D) down

Please enter the letter of the correct answer: _____

The magnitude $|\mathbf{u} \times \mathbf{v}| =$ _____

2.(1 pt) Let $\mathbf{a}$ = (9, 9, 2) and $\mathbf{b}$ = (4, 2, 10) be vectors.

Compute the cross product $\mathbf{a} \times \mathbf{b}$. (_____ , _____ , _____)

3.(1 pt)

If $\mathbf{a} = \mathbf{i} + \mathbf{j} + 1\mathbf{k}$ and $\mathbf{b} = \mathbf{i} + \mathbf{j} + 2\mathbf{k}$

Compute the cross product $\mathbf{a} \times \mathbf{b}$.

_____ **i** + _____ **j** + _____ **k**

4.(1 pt) If $\mathbf{a} = \mathbf{i} + 5\mathbf{j} + \mathbf{k}$ and $\mathbf{b} = \mathbf{i} + 7\mathbf{j} + \mathbf{k}$, find a unit vector with positive first coordinate orthogonal to both $\mathbf{a}$ and $\mathbf{b}$.

_____ **i** + _____ **j** + _____ **k**

5.(1 pt) Find the area of the parallelogram with vertices (2,5), (3, 7), (6, 12), and (7, 14).