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 \( \mathbf{a} = \mathbf{i} + \mathbf{j} + \mathbf{l} \mathbf{k} \) and \( \mathbf{b} = \mathbf{i} + \mathbf{j} + 2\mathbf{k} \), compute the cross product \( \mathbf{a} \times \mathbf{b} \).

   _________ \( \mathbf{i} \) + _________ \( \mathbf{j} \) + _________ \( \mathbf{k} \)

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 \( \mathbf{b} \).

   _________ \( \mathbf{i} \) + _________ \( \mathbf{j} \) + _________ \( \mathbf{k} \)

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

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