QUIZ #1, Math 253

1. Given the vectors $\vec{u} = \vec{i} - 2\vec{j}$ and $\vec{v} = \vec{i} + \vec{j} - 3\vec{k}$, calculate:

   $\vec{u} \cdot \vec{v} =$

   $\vec{u} \times \vec{v} =$

2. True or false? Justify your answer: $(\vec{a} \times \vec{b}) \times \vec{c} = \vec{a} \times (\vec{b} \times \vec{c})$.

3. Consider the three points $O(0,0,0)$, $A(1,0,0)$ and $B(0,1,0)$. Find the point $C(x,y,z)$ whose coordinates are all positive and such that: the angles satisfy

   $$\angle AOC = \angle BOC = \pi/3$$

   and the area of the triangle $\triangle AOC$ is equal to 1.