

0.1. **Cross Product of vectors.**

- (1) Find the area of the triangle with edges given by vectors

$$\langle 1, 1, 1 \rangle, \langle 2, -1, 0 \rangle$$

- (2) For which value of a is the following cross product the zero vector?

$$\langle 2, -2, 3 \rangle \times \langle 1, -1, a \rangle$$

- (3) For what vectors \vec{v}, \vec{u} is

$$|\vec{u} \times \vec{v}| = \vec{u} \cdot \vec{v} = 0$$

0.2. Lines and Planes.

(1) Find a unit vector perpendicular to the plane $3x + y - z = 2$.

(2) Find a plane P that contains the origin and the line ℓ defined by

$$x = t + 1$$

$$y = -1$$

$$z = -t$$