Worksheet, Feb 3

0.1. **Cross Product of vectors.**

(1) Find 2 vectors perpendicular to both $\vec{v}$ and $\vec{u}$:

$$\vec{u} = \langle 1, 3, 2 \rangle \qquad \vec{v} = \langle -1, 0, 3 \rangle$$

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

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

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

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

(4) What condition must $\vec{u}$ and $\vec{v}$ satisfie so that

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

(5) For what vectors $\vec{v}, \vec{u}$ is

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