Problems:

(1) Calculate $v \times w$

a) $v = \langle 1, 2, 1 \rangle$, $w = \langle 3, 1, 1 \rangle$

b) $v = \langle 2, 0, 0 \rangle$ $w = \langle -1, 0, 1 \rangle$

(2) $(i+j) \times k$

(3) Let $v = \langle a, b, c \rangle$. Calculate $v \times i$

Do you have a guess for $v \times j$ & $v \times k$?

(4) If v, w are orthogonal, what is $\|v \times w\|$ in terms of $\|v\|, \|w\|$? What if instead the angle b/w v & w is $\pi/4$?

(5) Let $u = \langle 1, 0, 0 \rangle$, $v = \langle 0, 2, 0 \rangle$, $w = \langle 1, 1, 2 \rangle$

What is the area of the parallelogram spanned by u & v? What is the volume of the parallelepiped spanned by u, v, & w?

(6) The cross product is <u>NOT</u> associative.

Let $u = \langle 1, 0, 0 \rangle$, $v = \langle 0, 1, 0 \rangle$, $w = \langle 1, 1, 1 \rangle$

Show $(u \times v) \times w \neq u \times (v \times w)$

(7) Write the eqn. of a plane w/ normal $n = \langle 1, 1, 1 \rangle$ passing through $P_0 = (4, -1, 1)$

(8) Find the equation of a plane parallel to $4x - 9y + z = 3$ that passes through the origin

(9) Find a parametric eqn. for the line of intersection of

$2x + y - 3z = 0$ & $x + y = 1$