Q-5

(1) prove that the four planes $my + nz = 0$ and $nz + lx = 0$, $lx + my + nz = p$ form a tetrahedron whose volume is $2p^3/3lmn$

$my + nz = 0$ — ①

$nz + lx = 0$ — ②

$lx + my + nz = p$ — ③

$AB = (0/m, 0/n)$
$B = (0/n, 0/l)$
$C = (p/l).p/m, p/n)$

I think the coordinates A, B, C from triangle as the base of the tetrahedron

$AB = [-0m/n, 0r\sqrt{2}]$

$AC = [0, 0P/m, -0p/n]$

the area of base is given by the length of the cross product : $AB \times AC$

the problem is how to find the height of tetrahedron

$P: lx + my + nz = p$

l, m, n are DCs of normal vector of plane

p : distane of plane from origin

$\sqrt{l^2 + m^2 + n^2} = 1$

$l^2 + m^2 + n^2 = 1$