1)

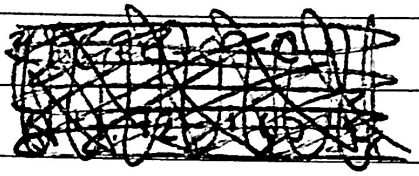
$A(2,1,3)$ $B(4,3,1)$ $C(3,2,4)$

$A \cdot 1.43 = A'(2.86, 1.43, 4.29)$

$Q = A' + B = (2.86+4, 1.43+3, 4.29+1) = (6.86, 4.43, 5.29)$

$Q(6.86, 4.43, 5.29)$ $\quad Q \to C = (-3.86, -2.43, -1.29)$

$$R_x(45°) = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & \cos 45 & -\sin 45 & 0 \\ 0 & \sin 45 & \cos 45 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} -3.86 \\ -2.43 \\ -1.29 \\ 1 \end{bmatrix} =$$

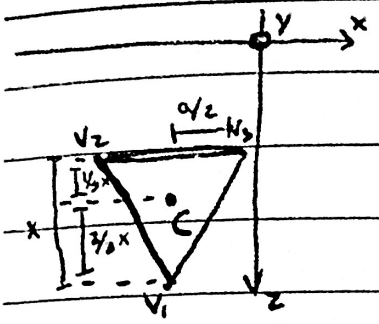


$$\begin{matrix} -3.86 + 0 + 0 + 0 \\ -\ 0 + 1.72 + (-0.91) + 0 \\ -\ 0 + 1.72 + 0.91 + 0 \\ +\ 0 + 0 + 0 + 1 \end{matrix} = \begin{matrix} -3.86 \\ -0.81 \\ -2.63 \\ 1 \end{matrix}$$

$Q \xrightarrow[R_x]{} C(-3.86, -0.81, -2.63)$ $\quad C_R = Q + Q \xrightarrow[R_x]{} C$

$C_R(3, 3.62, 2.66)$

2)



$a = 3.3$ $\quad P(x,y,z)$

$h = a\sqrt{2/3}$

$C(-1.812, -6.824, 5.247)$

$V_1(-1.812, -6.824, 7.152)$

$3.3^2 = 1.65^2 + x^2$

$V_2(-3.462, -6.824, 4.294)$

$x = \sqrt{3.3^2 - 1.65^2} = 2.858$

$V_3(-0.162, -6.824, 4.294)$

$x_1 = 2/3\,x = 1.905 \quad x_2 = 1/3\,x = 0.953$

$V_4(-1.812, -4.129, 5.247)$

$C \to V_1\,(0, 0, 1.905)$

$C \to V_2\,(-1.658, 0, -0.953)$

$C \to V_3\,(1.65, 0, -0.953)$

$C \to V_4\,(0, 2.695, 0)$

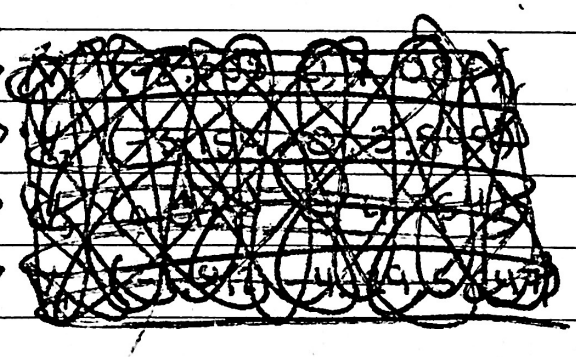
$$R_y(15°) = \begin{bmatrix} \cos -15 & 0 & \sin -15 & 0 \\ 0 & 1 & 0 & 0 \\ -\sin -15 & 0 & \cos -15 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$R_{V_1}(-0.493, 0, 1.84) \longrightarrow$

$R_{V_2}(-1.347, 0, -1.348) \longrightarrow$

$R_{V_3}(1.84, 0, -0.493) \longrightarrow$

$R_{V_4}(0, 2.695, 0) \longrightarrow$



$V_1'(-2.305, -6.824, 7.087)$

$V_2'(-3.159, -6.824, 3.899)$

$V_3'(0.028, -6.824, 4.754)$

$V_4'(-1.812, -4.129, 5.247)$