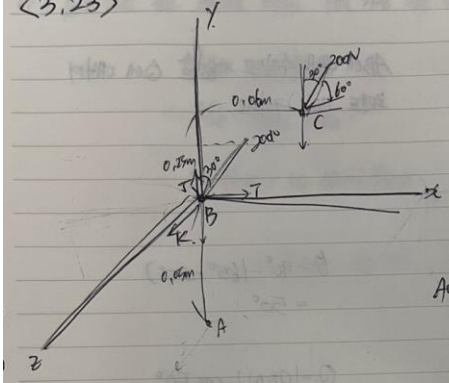
〈3.23〉



A에서의 모멘트를 구하시오.

$M_A = r_{C/A} \times F_C$

$r_{C/A} = (0.06m)\mathbf{i} + (0.075m)\mathbf{j}$

$F_C = -(200N)\cos 30°\mathbf{j} + (200N)\cos 60°\mathbf{k}$

$= -(200N)\cos 30°\mathbf{j} + (200N)\sin 30°\mathbf{k}$

$= -(200N)\times 0.8660\mathbf{j} + (200N)\times 0.5\mathbf{k}$

$= (-173.2\mathbf{j} + 100\mathbf{k})N$

$$\begin{vmatrix} \mathbf{i} & \mathbf{j} & \mathbf{k} \\ a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{vmatrix} = (a_2b_3 - a_3b_2)\mathbf{i} - (a_1b_3 - a_3b_1)\mathbf{j} + (a_1b_2 - a_2b_1)\mathbf{k}$$

$M_A = r_{C/A} \times F_C = 200 \begin{vmatrix} \mathbf{i} & \mathbf{j} & \mathbf{k} \\ 0.06 & 0.075 & 0 \\ 0 & -0.8660 & 0.5 \end{vmatrix}$

$= 200[(0.075\times 0.5)\mathbf{i} - (0.06\times 0.5)\mathbf{j} - (0.06\times 0.8660)\mathbf{k}]$

$= (7.50Nm)\mathbf{i} - (600Nm)\mathbf{j} - (10.39Nm)\mathbf{k}$