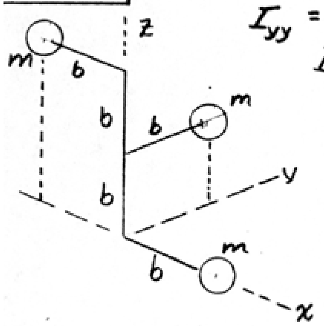
*B/67



$I_{xx} = m(2b^2) + m(2b)^2 = 6mb^2$

$I_{yy} = m(b^2+b^2+b^2+(2b)^2) = 7mb^2$

$I_{zz} = m(b^2+b^2+b^2) = 3mb^2$

$I_{xy} = 0,\ I_{yz} = mb^2,\ I_{xz} = -2mb^2$

Let $I_o = I/mb^2$ so Eq. B/11 becomes

$$\begin{vmatrix} 6-I_o & 0 & +2 \\ 0 & 7-I_o & -1 \\ +2 & -1 & 3-I_o \end{vmatrix} mb^2 = 0$$

Expansion gives $I_o^3 - 16I_o^2 + 86I_o - 92 = 0$

Solution by computer or algebraic formula gives

$I_1 = 7.53\ mb^2$

$I_2 = 6.63\ mb^2$

$\underline{I_3 = 1.844\ mb^2}$

For I_1 direction cosines substitute in Eq. B/12 & get

$$\left.\begin{aligned} (6-7.525)l_1 - 0 + 2n_1 &= 0 \\ 0 + (7-7.525)m_1 - n_1 &= 0 \\ 2l_1 - m_1 + (3-7.525)n_1 &= 0 \end{aligned}\right\} \text{with } l_1^2+m_1^2+n_1^2 = 1$$

solve & get $\underline{l_1 = 0.521,\ m_1 = -0.756,\ n_1 = 0.397}$