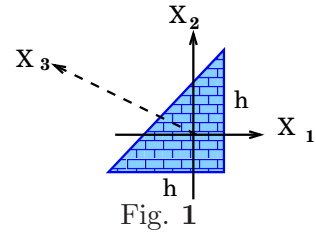[1] Show that the moment of inertia tensor of a uniform triangular plate, see figure, with centre of mass chosen as origin is given by

$$I = \frac{mh^2}{18} \begin{pmatrix} 1 & -\frac{1}{2} & 0 \\ -\frac{1}{2} & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \qquad (1)$$

Fig. 1

[2] Let S_{ij}, A_{ij} and be symmetric, ansymmetric tensors respectively. The for arbitrary tensor T_{ij}, **prove any one** of the following identities.

$(a)\ \ S_{ij}T_{ij} = \frac{1}{2}S_{ij}\big(T_{ij} + T_{ji}\big); \qquad (b)\ \ A_{ij}T_{ij} = \frac{1}{2}A_{ij}\big(T_{ij} - T_{ji}\big).$