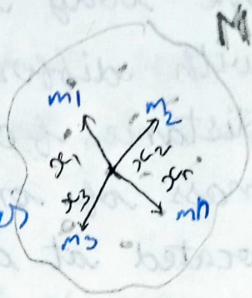
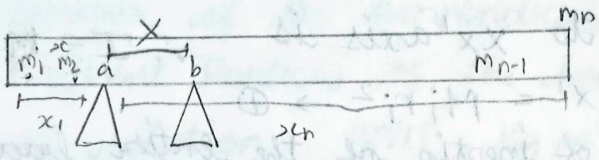
04/10/23

Centre of Mass (CM)

If the masses of all the particles of the system concentrated at a particular point is known as CM.





$$M = m_1 + m_2 + \cdots + m_n$$

$$M = \sum_{j=1}^{n} m_i$$

$$X = \frac{m_1 x_1 + m_2 x_2 + \cdots + m_n x_n}{m_1 + m_2 + \cdots + m_n}$$

$$CM = \frac{\sum_{i=1}^{n} m_i x_i}{\sum_{i=1}^{n} m_i}$$

Centre of Mass of Continuous body

$$\lim_{x \to 0} \frac{dm\, r_i}{\sum m_i} = \int \frac{dm\, r_i}{M}$$