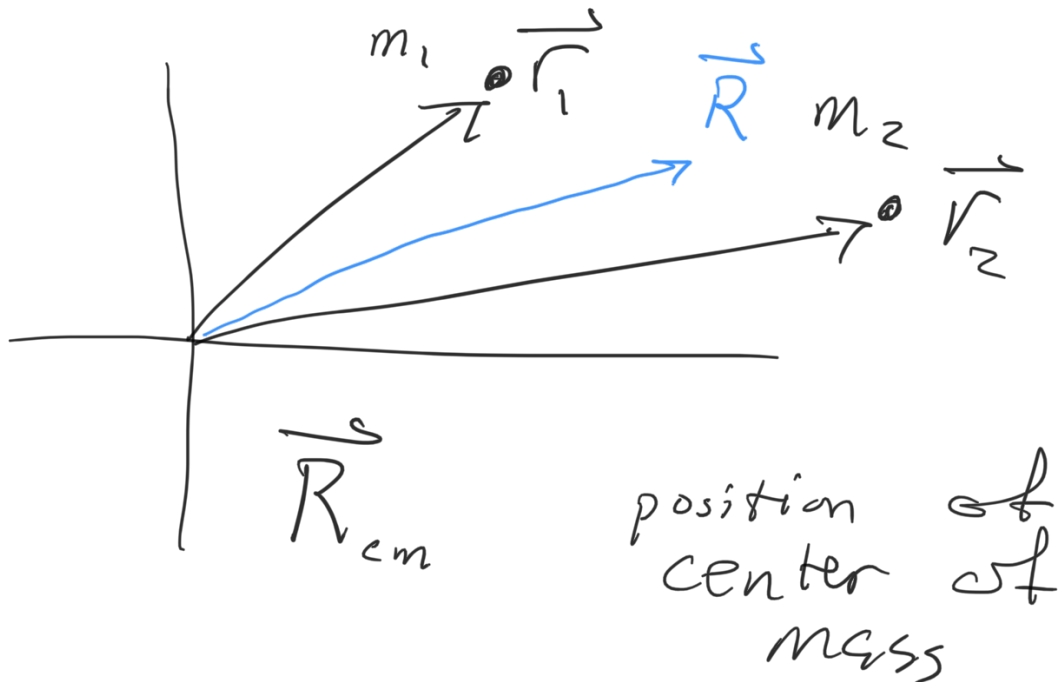


center of mass

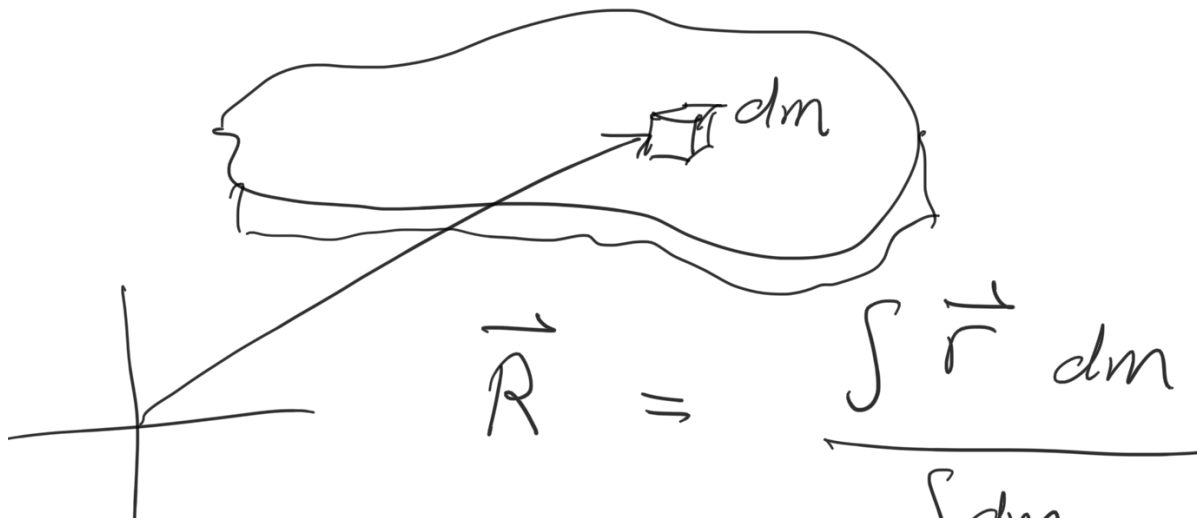


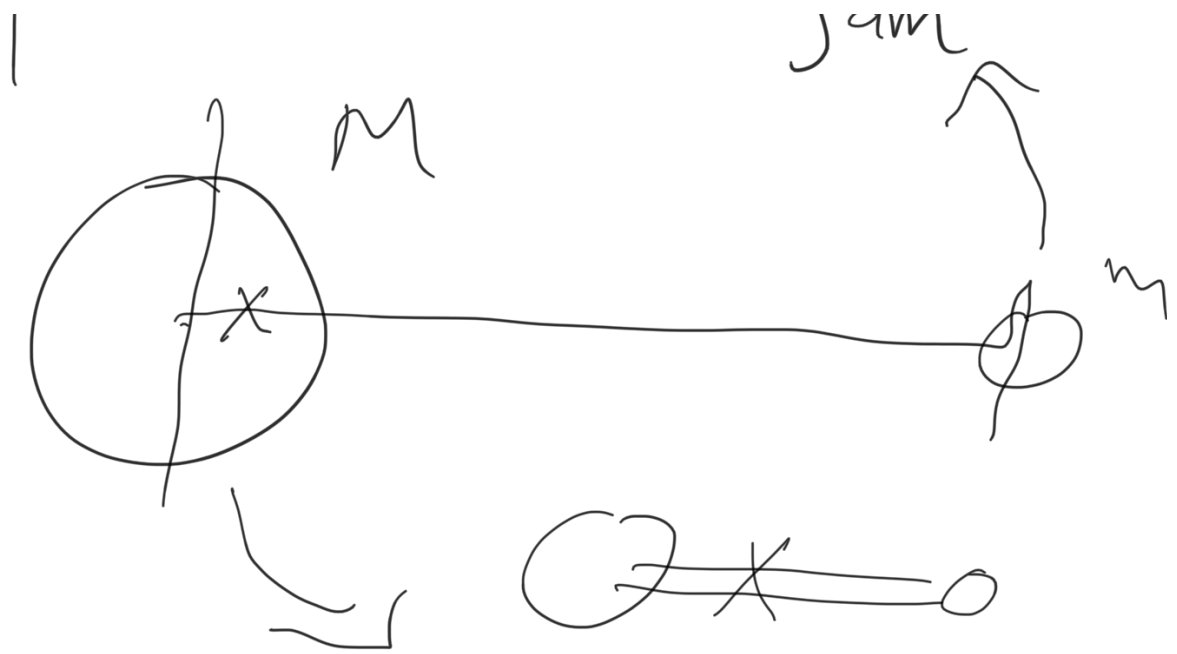
position of center of mass

$$\vec{R}_{cm} = \frac{\sum m_i \vec{r}_i}{M}$$

$$M = \sum m_i$$

= total mass





① Energy

② momentum

③ angular momentum

E

p

L

$$\vec{F} = m\vec{a}$$