- $\vec{r} \times \left(\ddot{\vec{r}} + \frac{\mu \vec{r}}{r^3} = 0 \right)$

expand: $\vec{r} \times \ddot{\vec{r}} + \frac{\mu}{r^3} \vec{r} \times \vec{r} = 0$

eliminate: $\vec{r} \times \vec{r} = 0 \Rightarrow \vec{r} \times \ddot{\vec{r}} = 0$

recognize: $\frac{d}{dt}(\vec{r} \times \dot{\vec{r}}) = \dot{\vec{r}} \times \vec{r} + \vec{r} \times \ddot{\vec{r}} = \vec{r} \times \ddot{\vec{r}}$

$\Rightarrow \frac{d}{dt}(\vec{r} \times \dot{\vec{r}}) = 0 \Rightarrow$ $\vec{r} \times \dot{\vec{r}} = \vec{h}$ } conserved quantity