Question
A particle moves under the action of the force $f(r)\mathbf{r}$. Prove that the angular momentum of the particle is constant.

Answer
$\mathbf{N} = f(r)\mathbf{r}$
$\mathbf{N} = \mathbf{r} \times \mathbf{F} = f(r)\mathbf{r} \times \mathbf{r} = 0$

as $\mathbf{N} = \dot{\mathbf{L}}$ then $\mathbf{N} = 0 \Rightarrow \dot{\mathbf{L}} = 0 \Rightarrow \mathbf{L} =$ constant.
i.e. angular momentum is constant.