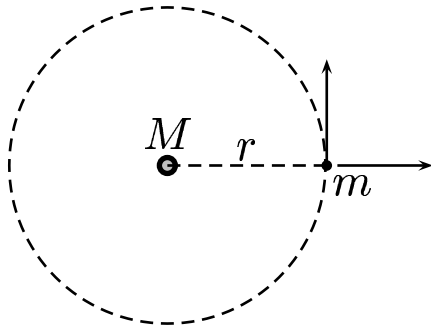


Note: The energy is independent of direction of the knock. For instance, it could be along the tangential or the radial direction.



Determine the energy ΔK_{min} required to knock a planet out of the solar system.

- A) $\Delta K_{min} = \frac{G m M}{r}$.
- B) $\Delta K_{min} = \frac{G m M}{2 r}$.
- C) $\Delta K_{min} = \frac{G m M}{r^2}$.

Minimum kinetic energy or the increment of the kinetic energy required ΔK is given by

$$U(r) + K + \Delta K = 0.$$

So,

$$\Delta K = \frac{G m M}{r} - \frac{G m M}{2 r} = \frac{G m M}{2 r}.$$

Answer **B**