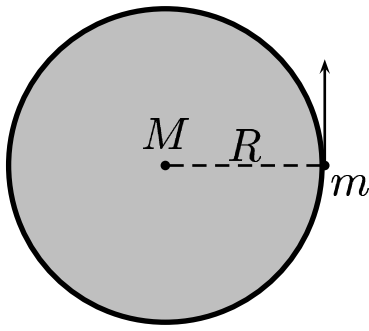


Denote the mass and radius of the earth by M and R . Assume effects due to the presence of other planets and the sun are negligible.



Find the minimum kinetic energy of a rocket with mass m , which allows it to move infinitely far away from the earth. This kinetic energy is referred to as the “escape kinetic energy”. Choose one

- A) Escape kinetic energy is $\frac{G m M}{R}$.
- B) Escape kinetic energy is $\frac{G m M}{2 R}$.
- C) Escape kinetic energy is $\frac{G m M}{R^2}$.
- D) Escape kinetic energy is $\frac{G m M}{2 R^2}$.
-

When the rocket is infinitely far away from the earth, its minimum total energy is 0.

So, the minimum kinetic energy K required may be determined through the relation

$$U(R) + K = 0.$$

Thus

$$K = \frac{G m M}{R}.$$

Answer **A**