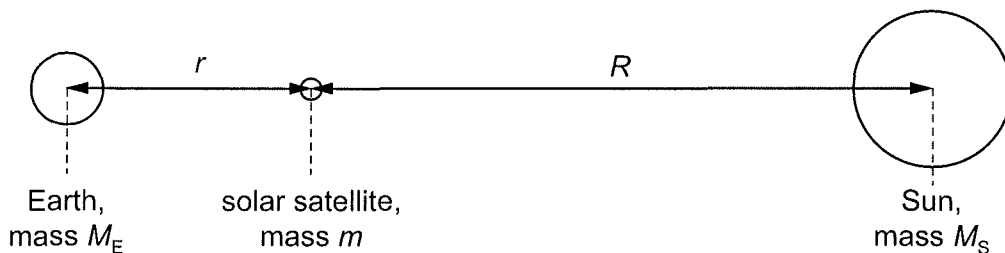


- 13 The diagram shows a solar satellite, mass  $m$ , positioned directly between the Earth, mass  $M_E$ , and the Sun, mass  $M_S$ . The satellite is a distance  $r$  from the Earth and a distance  $R$  from the Sun.



The satellite rotates in a circle around the Sun once a year and therefore moves around the Sun with the Earth, both having the same angular velocity  $\omega$ .

Which *force = mass  $\times$  acceleration* equation applies for the satellite?

- A  $\frac{GM_S m}{R^2} = m \times (R\omega^2)$
- B  $\frac{GM_E m}{R^2} = m \times (r\omega^2)$
- C  $\left( \frac{GM_E m}{r^2} - \frac{GM_S m}{R^2} \right) = m \times (R\omega^2)$
- D  $\left( \frac{GM_S m}{R^2} - \frac{GM_E m}{r^2} \right) = m \times (R\omega^2)$