Answer on Question 76294, Physics, Other

Question:

Two spherical objects have masses of $200\ kg$ and $500\ kg$. Their centers are separated by a distance of $25\ m$. Find the gravitational attraction between them.

Solution:

We can find the gravitational attraction between the spherical objects from the Newton's universal law of gravitation:

$$F_{attr} = G\frac{m_1 m_2}{r^2},$$

here, $G = 6.67 \cdot 10^{-11}\ Nm^2/kg^2$ is the gravitational constant; m_1, m_2 are the masses of the objects, respectively; r is the distance between the centers of the objects.

Then, we get:

$$F_{attr} = G\frac{m_1 m_2}{r^2} = 6.67 \cdot 10^{-11}\ \frac{Nm^2}{kg^2} \cdot \frac{200\ kg \cdot 500\ kg}{(25\ m)^2} = 1.067 \cdot 10^{-8}\ N.$$

Answer:

$F_{attr} = 1.067 \cdot 10^{-8}\ N.$