Answer on Question 71971, Physics, Other

Question:

What is the force of gravitational attraction between two spherical $200\,kg$ masses whose centers are 3.00 meters apart?

Solution:

We can find the force of gravitational attraction, F, between two spherical masses by applying the Newton's law of universal gravitation:

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

here, G is the universal gravitational constant; m_1, m_2 are the masses of first and second objects, respectively; r is the distance between the centers of two objects.

Then, we get:

$$F = G\frac{m_1 m_2}{r^2} = 6.67 \cdot 10^{-11}\ \frac{Nm^2}{kg^2} \cdot \frac{200\ kg \cdot 200\ kg}{(3.00\ m)^2} = 2.96 \cdot 10^{-7}\ N.$$

Answer:

$F = 2.96 \cdot 10^{-7}\ N.$