

## Answer to Question #54151 – Physics – Mechanics – Kinematics – Dynamics

### Question

(a) What is the magnitude of the force of gravity between Earth and Jupiter (take mass of Earth  $M_E = 6.00 \cdot 10^{24}$  kg, mass of Jupiter  $M_J = 1.90 \cdot 10^{27}$  kg, and the distance between their centres  $R_{EJ} = 5.89 \cdot 10^8$  m)?

(b) At what point between Earth and Jupiter is the net force of gravity on a body by both Earth and Jupiter exactly zero?

### Answer

a)  $F_{grav} = \frac{m_1 \cdot m_2}{d^2} = \frac{6001024 \cdot 1901027}{589108^2} = 32.87;$

b) The point is, where the distance satisfy the equation:

$$\frac{M_E}{(d-x)^2} = \frac{M_J}{x^2} \Rightarrow x = 212160 \text{ m};$$