

The asteroid has a mass  $7.395 \times 10^{20}$  kg and a radius of 539.7 km. What is  $g$  on the surface? The value of the universal gravitational constant is  $6.67259 \times 10^{-11}$  N\*m^2/kg^2.

Answer in units of m/s^2.

Solution:

$$F = G \frac{M * m}{R^2}$$

$$F = m * g$$

$$m * g = G \frac{M * m}{R^2}$$

$$g = G \frac{M}{R^2}$$

$$g = 6.67259 \times 10^{-11} N \cdot \frac{m^2}{kg^2} \cdot \frac{7.395 \times 10^{20} kg}{(539700 m)^2} = 0.1694 \text{ m/s}^2$$