Newton's Law of Gravity

Two masses, m_1 and m_2, experience *gravitational attractive force* to each other, that depends on distance between them, r:

$$F = -\frac{Gm_1m_2}{r^2}; \qquad G = 6.7 \times 10^{-11}\, \frac{m^3}{kg \cdot s^2}$$

G is called Gravitational Constant.

Homework

a) By using Newton's law of gravity, find the gravitational acceleration on the surface of a planet with mass M and radius R. For doing this, consider an apple of mass m. Its weight is mg. But is also must be equal to Newton's gravitational force.

b) Imagine that you discovered a planet with the same density as Earth, but its radius is twice as big. What will be the value of g on that planet?