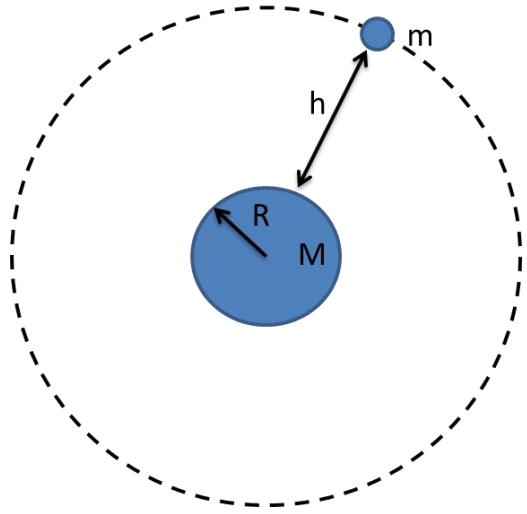


Answer on Question #43410, Physics, Mechanics | Kinematics | Dynamics

With a mass of 560 kg, Anik A was placed in a geostationary orbit 35,800 km above the Earth's equator. What is Anik A's weight while in orbit?

Solution.



The relation for weight of object:

$$W = mg$$

Where g is gravitational acceleration. In the orbit force of gravitation is:

$$F_{grav} = \frac{GMm}{(R + h)^2} = mg = W$$

Where M is mass of Earth, m is mass of Anik A, R is radius of Earth.

So:

$$W = \frac{GMm}{(R + h)^2}$$

Numerically:

$$W = \frac{6.67 \cdot 10^{-11} \frac{m^3}{kg \cdot s^2} \cdot 5.97 \cdot 10^{24} kg \cdot 560 kg}{(6371000 m + 35800000 m)^2} \approx 126 N$$

Answer: 126 N