Answer on Question #45448, Physics, Mechanics — Kinematics — Dynamics

Please convert 1100 kPa into $kg/m*s^2$ and $kg/km*s^2$

also this question:

At 45degree latitude, gravitational acceleration as a function of of elevation z above sea level is given by g = a - bz where a = 9.807 m/s^2 and b = 3.32 E-6 s^-2. Determine the height above sea level (z) where the weight of an object will decrease by 0.4%. find z = ? m

Solution

$$1100kPa = 1100 \cdot 10^3 kg/m*s^2 = 1100 \cdot 10^6 kg/km*s^2$$

Question.

so we have

$$g(z_1) = a \cdot 0.996$$

Hence

$$g - a = g(z_1) - a \cdot 0.996 = 0.004a = bz_1$$

$$0.004 \cdot 9.807 = 3.32 \cdot 10^{-6} z_1$$

$$z_1 = \frac{0.004 \cdot 9.807}{3.32 \cdot 10^{-6}} \approx 11815.7\, m$$

Answer is z=11815.7 m.