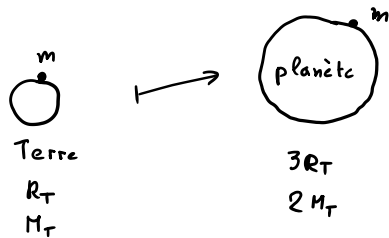


4.20



$$\text{Sur Terre : } F_p = m \cdot g_T = m \cdot G \frac{M_T}{R_T^2}$$

$$\begin{aligned} \text{Sur la planète : } F_p' &= m \cdot g_p = m \cdot G \frac{2M_T}{(3R_T)^2} = \frac{2}{9} m \cdot G \frac{M_T}{R_T^2} \\ &= \frac{2}{9} F_p \\ &= \frac{2}{9} \cdot 7 \cdot 10^4 \\ &= \underline{\underline{1,56 \cdot 10^4 N}} \end{aligned}$$

4.21

$$\frac{g_{\text{sommet}}}{g_{\text{mer}}} = \frac{\cancel{G} \cancel{M_T} \cdot \frac{1}{(R_T + h)^2}}{\cancel{G} \cancel{M_T} \cdot \frac{1}{R_T^2}} = \frac{R_T^2}{(R_T + h)^2} = \frac{\cancel{R_T^2}}{\cancel{R_T^2} (1 + h/R_T)^2} = \left(1 + \frac{h}{R_T}\right)^{-2} \approx 1 - 2 \frac{h}{R_T} = \underline{\underline{0,997 \dots}}$$

$$\begin{cases} h = 8848 \text{ m} \\ R_T = 6370 \text{ km} \end{cases}$$

$h \ll R_T$
 $\Rightarrow$ Développement limité