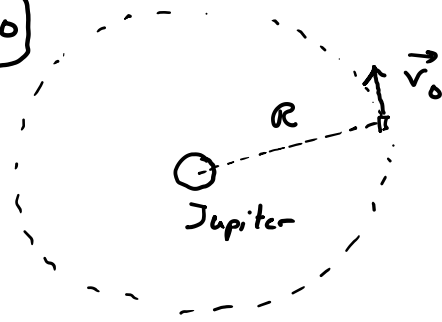


5.20



$$R = R_J + r = 7,2 \cdot 10^7 \text{ m}$$

$$M_J = 1,9 \cdot 10^{27} \text{ kg}$$

$$v_0 = \sqrt{G \frac{M_J}{R}} \approx \underline{\underline{4,2 \cdot 10^4 \text{ m/s}}}$$

5.21



$$v = \frac{130}{3,6}$$

$$\text{Poids ressentis} = F_N = m \frac{v^2}{r} = m \frac{g}{2}$$

$$\Rightarrow v^2 = \frac{gr}{2} \Rightarrow r = \frac{2v^2}{g} = \frac{2}{9,81} \cdot \left(\frac{130}{3,6}\right)^2 \approx \underline{\underline{2,7 \cdot 10^2 \text{ m}}}$$

5.22 Satellite synchrone $\Rightarrow T_s = 243 \text{ j} \cdot 3600 \cdot 24 = 2,0995 \cdot 10^7 \text{ s}$

$$v_s = \frac{2\pi r}{T_s} = \sqrt{G \frac{M_V}{r}} \Rightarrow \frac{4\pi^2 r^2}{T_s^2} = G \frac{M_V}{r} \Rightarrow \frac{4\pi^2 r^3}{T_s^2} = G M_V$$

$$\Rightarrow r^3 = \frac{G M_V T_s^2}{4\pi^2} \Rightarrow r = \left(\frac{G M_V T_s^2}{4\pi^2}\right)^{1/3} = \underline{\underline{1,5 \cdot 10^9 \text{ m}}}$$

5.23

$$r = 3,85 \cdot 10^8 \text{ m}$$

$$M_T = 5,97 \cdot 10^{24} \text{ kg}$$

$$\text{ici, } \frac{T^2}{r^3} = \frac{4\pi^2}{G M_T} \Rightarrow T^2 = \frac{4\pi^2 r^3}{G M_T} \Rightarrow T = \left(\frac{4\pi^2 r^3}{G M_T}\right)^{1/2} \approx \underline{\underline{2,38 \cdot 10^6 \text{ s}}}$$

|| ou environ 27 jours
12 heures