5.8 $2^{\text{ème}}$ loi de Newton : $\sum F_n = m\frac{v^2}{r}$ $\Rightarrow v = \left(\frac{r}{m}\sum F_n\right)^{1/2}$

$$= \left(\frac{0,25}{0,015}\cdot 0,028\right)^{1/2} = \underline{\underline{0,68\ m/s}}$$

5.9 (a). F_T = force "normale" $= m\frac{v^2}{r}$

$$v = \frac{2\pi r}{T} \Rightarrow F_T = m\cdot\frac{4\pi^2 r^{\cancel{2}}}{\cancel{r}\,T^2} = m\cdot\frac{4\pi^2 r}{T^2} = 0,012\cdot\frac{4\pi^2 0,1}{0,5^2}$$

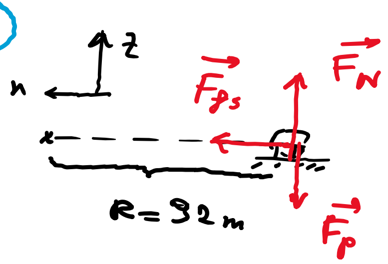
$$= \underline{\underline{0,19\ N}}$$

(b). si v double, F_T $\underline{\underline{\text{quadruple}}}$!

5.10 $2^{\text{ème}}$ loi de Newton : $\sum F = F_T = m\frac{v^2}{r}$

$$\Rightarrow r_{min} = \frac{mv^2}{F_{T\,max}} = \underline{\underline{3,3\ m}}$$

5.11



$2^{\text{ème}}$ loi de Newton : $\sum\vec{F} = \vec{F}_{fs} + \vec{F}_N + \vec{F}_P = m\vec{a}_n$

Sur z : $F_N = F_P = mg$

Sur n : $F_{fs}^{max} = m\frac{v^2}{r} = \mu_s F_n = \mu_s mg$

$$\Rightarrow \mu_s = \cancel{m}\frac{v^2}{r}\cdot\frac{1}{\cancel{m}g} = \frac{v^2}{rg} = \underline{\underline{0,75}}$$