



$\bullet \cos \alpha = \frac{R_1}{R_2}$ ou $\cos(\alpha + \phi) = \frac{R_1}{R_2}$
 $\bullet R_2 = \frac{R_1}{\cos(\alpha + \phi)}$

$\mu_s = 0,15$ si $0,15 = \tan \phi$
 $\Rightarrow \phi = \tan^{-1}(0,15) = 8,5^\circ$
 et $11,3^\circ$

$\frac{22800}{\cos 80} = 24000$

$\bullet \sin(\alpha + \phi) = \frac{P_1'}{R_2} \Rightarrow P_1' = \sin(\alpha + \phi) \times R_2$

et $\cos(\alpha + \phi) = \frac{Y}{R_2}$

$\bullet \tan \phi = \frac{P_1''}{Y}$

$\Rightarrow P_1'' = Y \times \tan \phi = [\cos(\alpha + \phi) \times R_2] \times \tan \phi$

$P_2 = P_1' + P_1'' = \left[\sin(\alpha + \phi) \times R_2 \right] + \left[\cos(\alpha + \phi) \times \tan \phi \times R_2 \right]$
 $= R_2 \left[\sin(\alpha + \phi) + \left[\cos(\alpha + \phi) \times \tan \phi \right] \right]$
 $24000 \times \left[\begin{matrix} 0,34 \\ 0,14 \end{matrix} + \begin{matrix} 0,94 \times 0,18 \\ 0 \end{matrix} \right]$
 $24000 \times \left[\begin{matrix} 0,5 \\ 0,17 \end{matrix} \right] = 12000 \cdot 408$ si pas de frottement