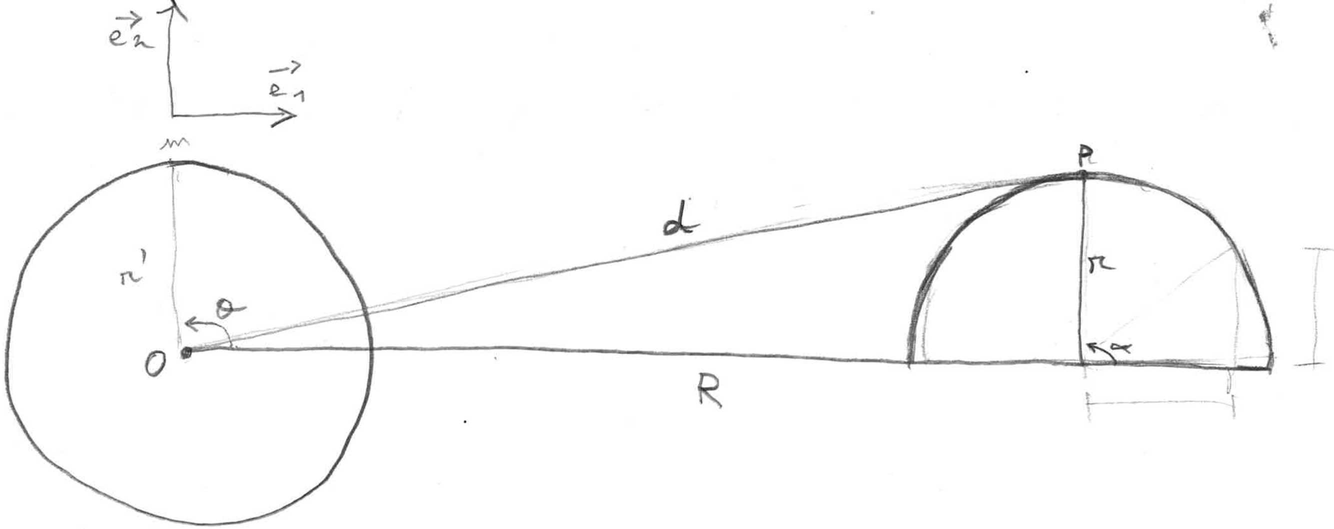
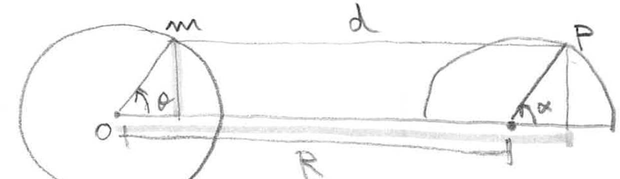


d is constant
→ rigid bar
$\vec{d} = \vec{mP}$

$m(m_1, m_2)$
$P(P_1, P_2)$
$\alpha = f(\theta)$



$O(0,0)$

$\rightarrow m_1 = r' \cos\theta$
$m_2 = r' \sin\theta$
$\rightarrow P_1 = R + r\cos\alpha$
$P_2 = r \sin\alpha$

$$\vec{mP} = \begin{pmatrix} R + r\cos\alpha - r'\cos\theta \\ r\sin\alpha - r'\sin\theta \end{pmatrix}$$

$$\Rightarrow \|\vec{d}\| = \sqrt{(R + r\cos\alpha - r'\cos\theta)^2 + (r\sin\alpha - r'\sin\theta)^2}$$

$$\Rightarrow d^2 = R^2 + \boxed{Rr\cos\alpha} - Rr'\cos\theta + \boxed{Rr\cos\alpha} + r^2\cos^2\alpha - rr'\cos\alpha\cos\theta - Rr'\cos\theta - rr'\cos\alpha\cos\theta + r'^2\cos^2\theta$$
$$+ r^2\sin^2\alpha - 2rr'\sin\alpha\sin\theta + r'^2\sin^2\theta$$

$$= R^2 + 2Rr\cos\alpha - 2Rr'\cos\theta \boxed{- 2rr'\cos\alpha\cos\theta} + r^2\cos^2\alpha + r'^2\cos^2\theta + r^2\sin^2\alpha$$
$$\boxed{- 2rr'\sin\alpha\sin\theta} + r'^2\sin^2\theta$$

$$= R^2 + r'^2 + r^2 - 2rr'\cos(\theta - \alpha) + 2R(r\cos\alpha - r'\cos\theta)$$

$$\Rightarrow \underbrace{-2rr'}_{a}\cos(\theta - \alpha) + \underbrace{2Rr}_{b}\cos\alpha \underbrace{-2Rr'}_{c}\cos\theta + \underbrace{R^2 + r'^2 + r^2 - d^2}_{d} = 0$$

$\theta = y \quad , \quad \alpha = x$

Wich makes, if we consider the special case were $r = r'$:

$$-2r^2 \cos(\theta - \alpha) + 2Rr \cos\alpha - 2Rr\cos\theta + R^2 + 2r^2 - d^2 = 0$$