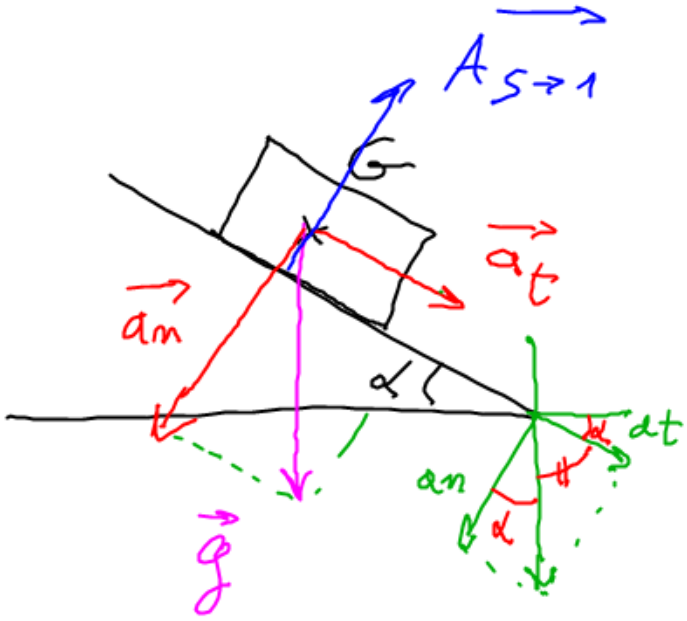
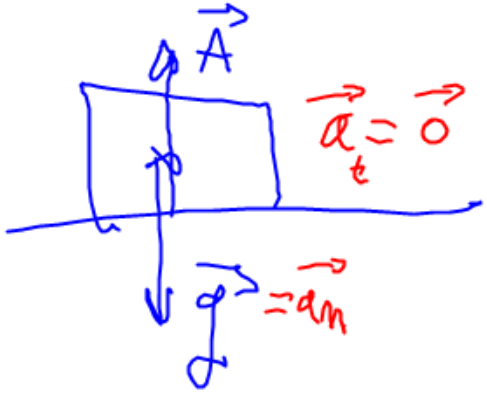
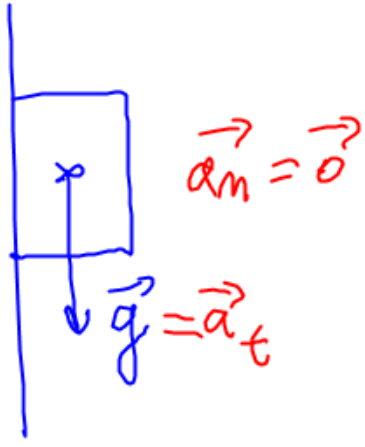
PFD:

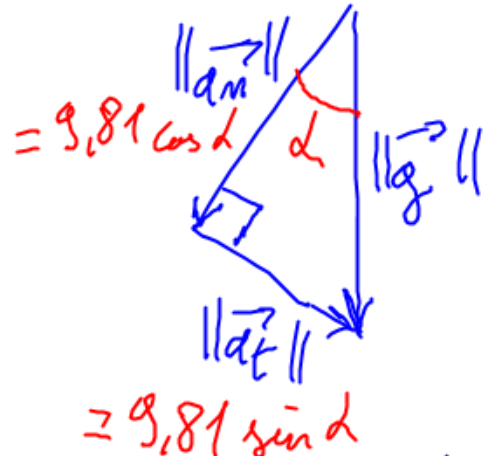
$$\Sigma \vec{F} = m \cdot \vec{a}_G$$



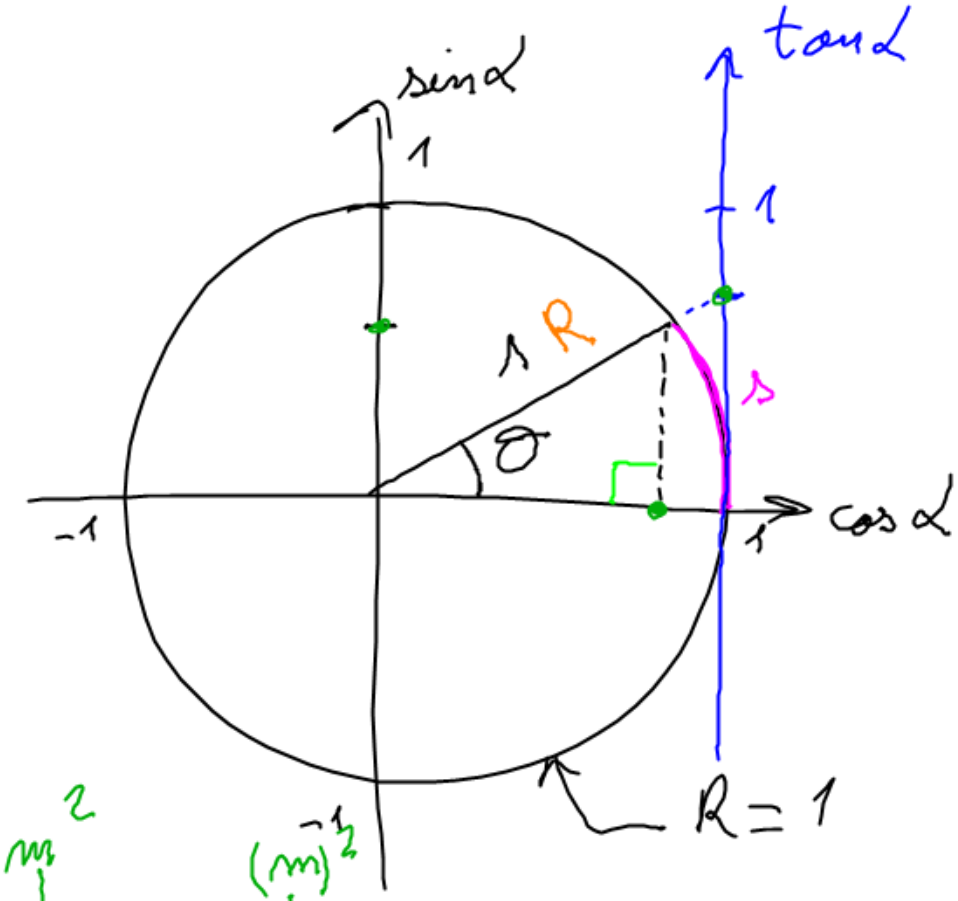
$$\vec{a}_n + \vec{a}_t = \vec{g}$$







$$\|\vec{g}\| = 9{,}81\ m/s^2$$

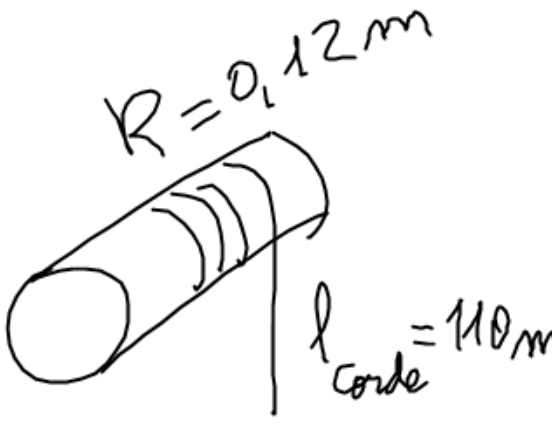


$S = \pi R^2$ (m^2, $(m)^2$)

$P = 2\pi R$ (m, m)

$1\,tr = 360° = 2\pi$ rad

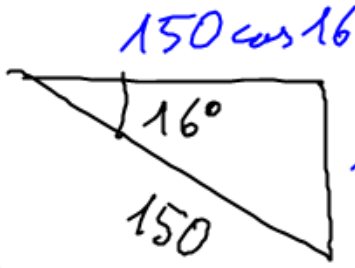
$s = \theta \cdot R$ (rad, m, m)

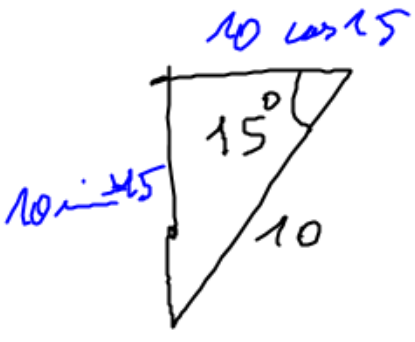


$\theta = \frac{s}{R}$

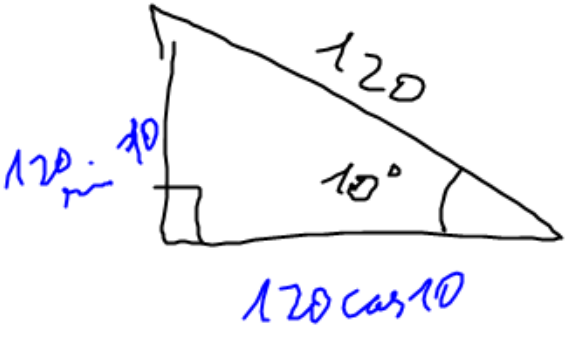
$\theta = \frac{110}{0{,}12} \simeq 916$ rad

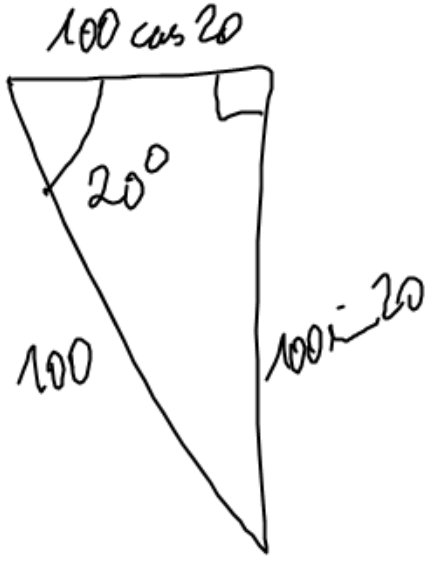
$\theta \simeq 146$ tr

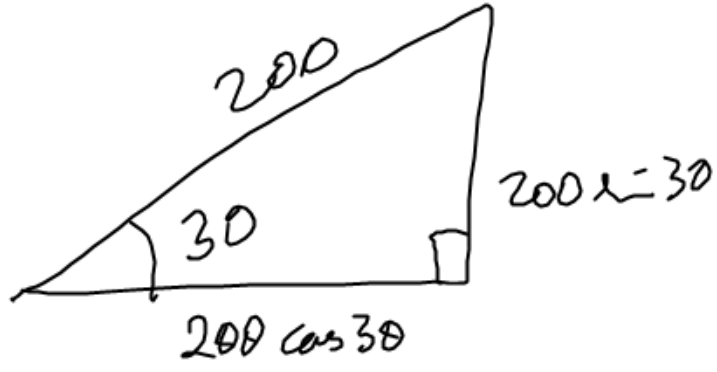

150 cos 16
16°
150
150. sin 16

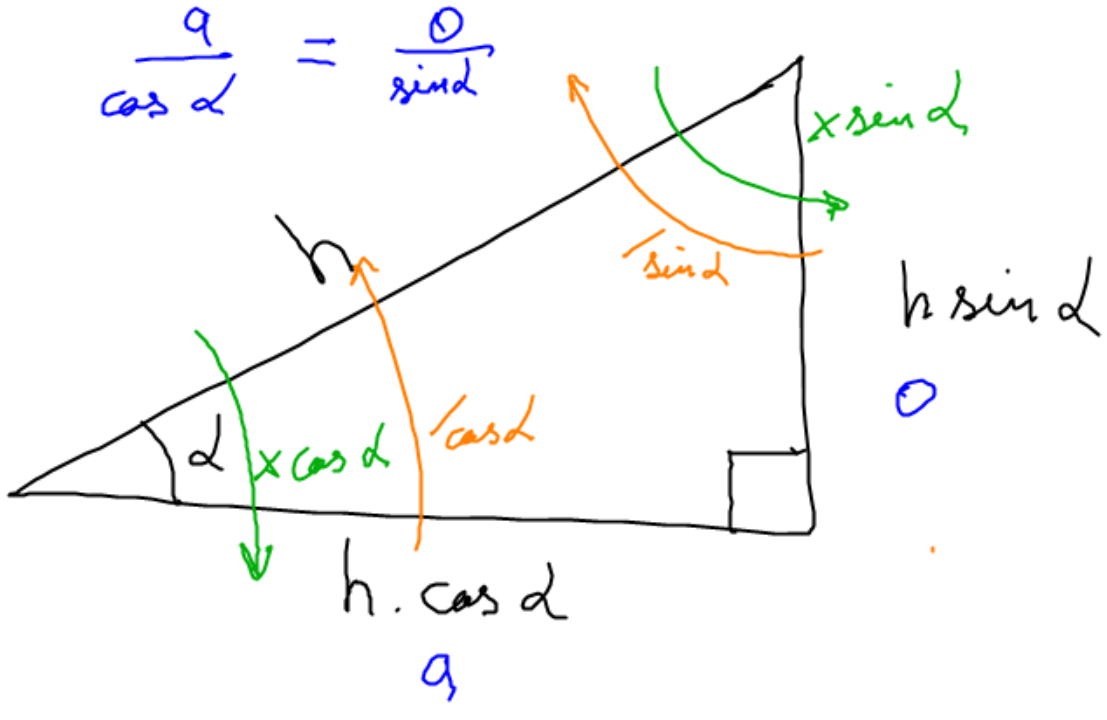

10 cos 15
15°
10 sin 15
10

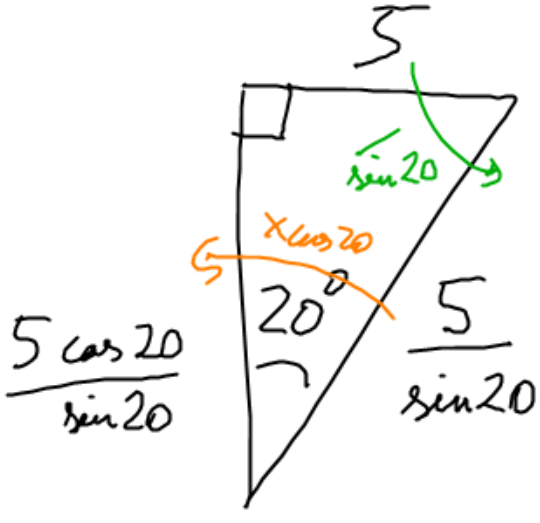

1. R
α
R sen α
opp
R cos α
adj

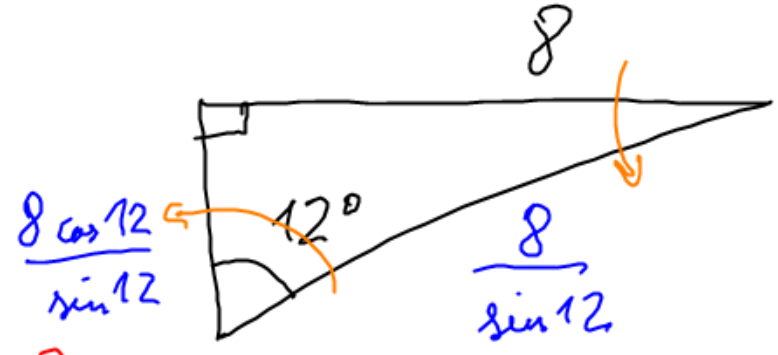

120
120 sin 10
10°
120 cos 10


100 cos 20
20°
100
100 sin 20

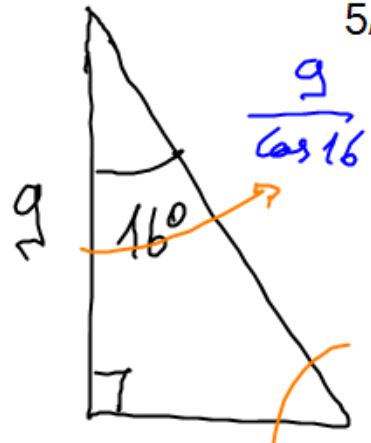

200
200 sin 30
30
200 cos 30


q / cos α = o / sin α
x sin α
h
/ sin α
h sin α
o
α
x cos α
/ cos α
h . cos α
q





$= \frac{8}{\tan 12}$

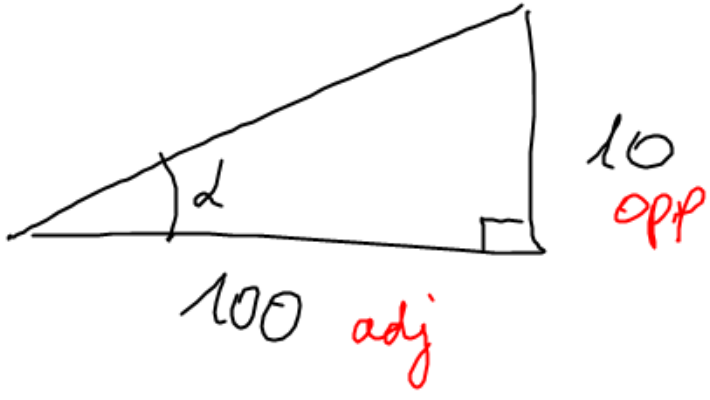


$$\tan \alpha = \frac{\sin \alpha}{\cos \alpha}$$

$$\tan 16 = \frac{a}{9}$$

$$a = 9 . \tan 16$$

$\frac{1}{x} = x^{-1}$



pente 10%

$p = 0,1$

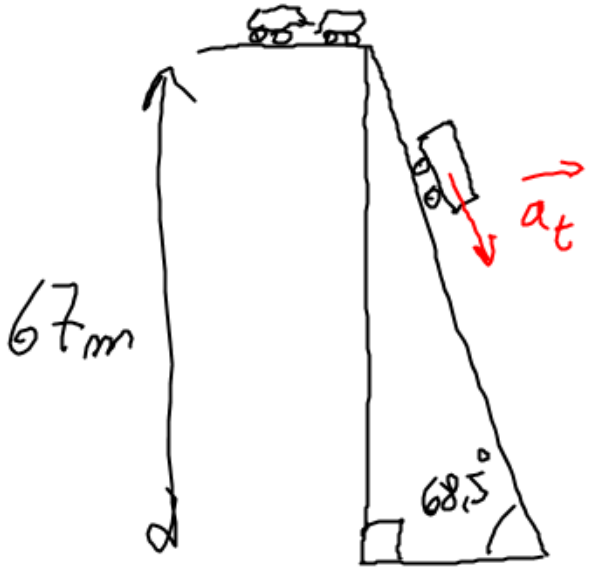
$$\tan\alpha = \frac{\text{opp}}{\text{adj}}$$

$$= \frac{10}{100} = 0,1 = 10\%$$

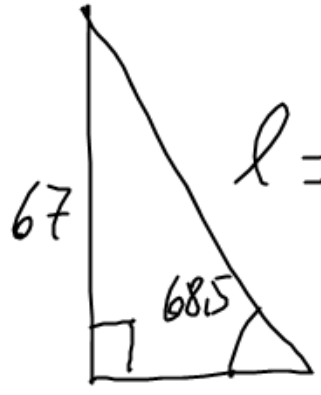
$\tan\alpha = \text{pente}$

$\tan\alpha = 0,1$

$\alpha = \tan^{-1}(0,1) \simeq 5,7°$

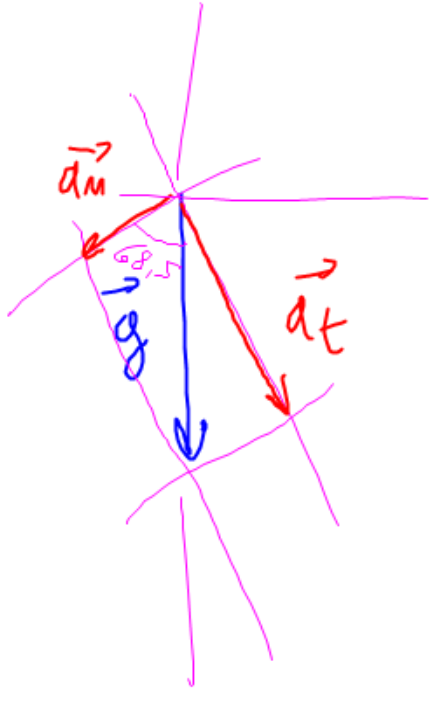


l rail descente :



$l = \frac{67}{\sin 68,5}$

$l \simeq 72$ m



$at = 9,81 \times \sin 68,5$

$\simeq 9,1 \text{ m/s}^2 \simeq 0,9\ g$