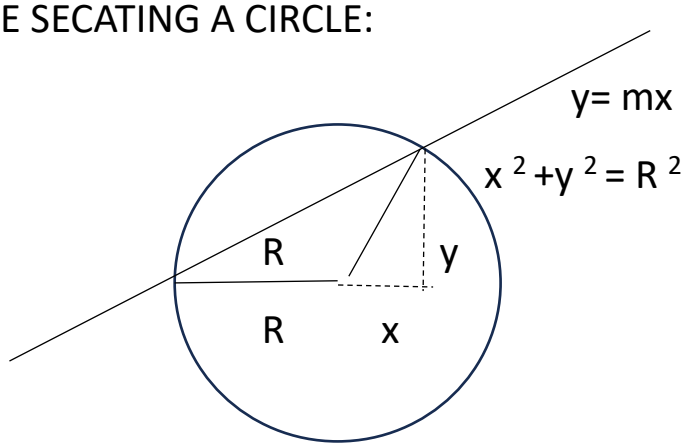
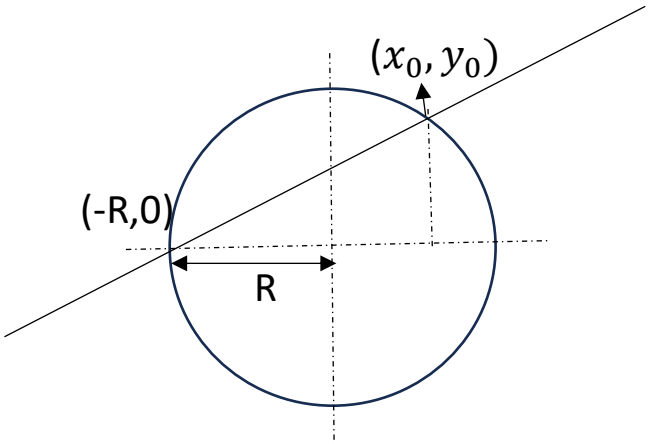
LINE SECATING A CIRCLE:



$y^2 = R^2 - x^2$ $y^2 = (mx)^2$

$R^2 - x^2 = m^2 x^2 \rightarrow R^2 - x^2(1+ m^2) = 0 \rightarrow x=\frac{R^2}{(1+m^2)}$

$y= m.\frac{R^2}{(1+m^2)}$



$\vec{v}$= director vector= (x_0, y_0)- (-R,0)= $(x_0 + R, y_0)$

Knowing that (x, y)= t.($\vec{v}$) + (-R, 0)

x= t. ($x_0 + R$)+ (- R)= R(t-1)+ t. x_0

y= t. y_0

being (x, y) any point on the secant line.

attention that we can write $x_0{}^2 + y_0{}^2 = R^2$ relative to the circle and also the slope of the line m=$\frac{y_0}{R+x_0}$

Knowing R and (x_0, y_0)we can find the equation of the secant line.

We can also play a little:

$y_0 = \sqrt{R^2-(x_0)^2}$ substituting: y= $\frac{\sqrt{R^2-(x_0)^2}}{(R+x_0)}$.x

y= $\frac{\sqrt{(R+x_0)(R-x_0)}}{(R+x_0)}$.x →y= $\frac{\sqrt{(R-x_0)}}{\sqrt{(R+x_0)}}$.x