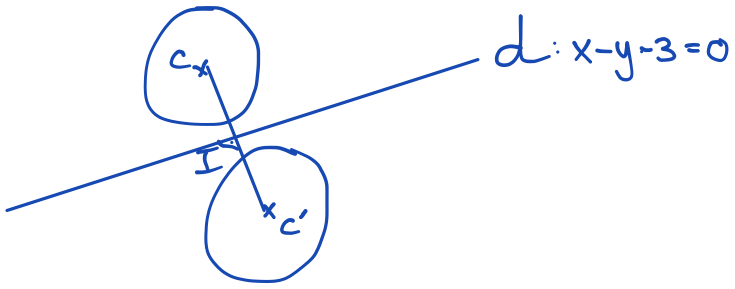
Exercice 3.3.15

$\mathcal{C}$: $x^2+y^2-2x-4y+4=0 \iff (x^2-2x+1)+(y^2-4y+4) = -4+1+4$

$\iff (x-1)^2 + (y-2)^2 = 1$

$C(1;2)$ et $r=1$



* $(CC') \perp d \Rightarrow (CC') : x+y+k=0$

  $C \in (CC') \Rightarrow 1+2+k=0$

  $k=-3$

$\Rightarrow (CC') : x+y-3=0$

* $\{I\} = (CC') \cap d : \begin{cases} x+y=3 \\ x-y=3 \end{cases} \iff \begin{cases} x+y=3 \\ 2x=6 \end{cases} \iff \begin{cases} x=3 \\ y=0 \end{cases} \Rightarrow I(3;0)$

* $OC' = \vec{OI} + \vec{IC'} = \vec{OI} + \vec{CI} = \begin{pmatrix} 3 \\ 0 \end{pmatrix} + \begin{pmatrix} 2 \\ -2 \end{pmatrix} = \begin{pmatrix} 5 \\ -2 \end{pmatrix} \iff C'(5;-2)$

$\Rightarrow \mathcal{C}' : \underline{(x-5)^2 + (y+2)^2 = 1}$