

Ex 2.1.16

a) $T(-1; 2)$ et $\gamma: x^2 + y^2 = 5 \Rightarrow C(0; 0)$

$T \in \gamma: 1 + 4 = 5 \checkmark$

$\vec{CT} = \begin{pmatrix} -1 \\ 2 \end{pmatrix} - \begin{pmatrix} 0 \\ 0 \end{pmatrix} = \begin{pmatrix} -1 \\ 2 \end{pmatrix} \Rightarrow t: -x + 2y + c = 0$

$T \in t \Rightarrow -(-1) + 2 \cdot 2 + c = 0 \Leftrightarrow c = -5 \Rightarrow t: \underline{-x + 2y - 5 = 0} \Leftrightarrow \underline{x - 2y + 5 = 0}$

b) $T(-5; 7)$ et $\gamma: (x+2)^2 + (y-3)^2 = 25 \Rightarrow C(-2; 3)$

$T \in \gamma: (-5+2)^2 + (7-3)^2 = (-3)^2 + 4^2 = 9 + 16 = 25 \checkmark$

$\vec{CT} = \begin{pmatrix} -5 \\ 7 \end{pmatrix} - \begin{pmatrix} -2 \\ 3 \end{pmatrix} = \begin{pmatrix} -3 \\ 4 \end{pmatrix} = \vec{n}_t \Rightarrow t: -3x + 4y + c = 0$

$T \in t \Rightarrow -3 \cdot (-5) + 4 \cdot 7 + c = 0 \Leftrightarrow 15 + 28 + c = 0 \Leftrightarrow c = -43$

$\Rightarrow \underline{t: -3x + 4y - 43 = 0} \Leftrightarrow \underline{3x - 4y + 43 = 0}$
ou

c) $T(0; 0)$ et $\gamma: x^2 + y^2 - 3x + 7y = 0$

$x^2 - 3x + \frac{9}{4} + y^2 + 7y + \frac{49}{4} = 0 + \frac{9}{4} + \frac{49}{4}$

$(x - \frac{3}{2})^2 + (y + \frac{7}{2})^2 = \frac{58}{4} \Rightarrow C(\frac{3}{2}; -\frac{7}{2})$

$T \in \gamma: 0 + 0 - 0 + 0 = 0 \checkmark$

$\vec{CT} = \begin{pmatrix} -3/2 \\ 7/2 \end{pmatrix} = \frac{1}{2} \begin{pmatrix} -3 \\ 7 \end{pmatrix} \Rightarrow \vec{n} = \begin{pmatrix} -3 \\ 7 \end{pmatrix} \Rightarrow t: -3x + 4y + c = 0$

$T(0; 0) \in t: 0 + 0 + c = 0 \Leftrightarrow c = 0 \Rightarrow \underline{t: -3x + 4y = 0}$

$\Leftrightarrow \underline{3x - 4y = 0}$