$\frac{7}{1}$

$d_1: \boxed{y = 7x - 5}$

$x = 1$

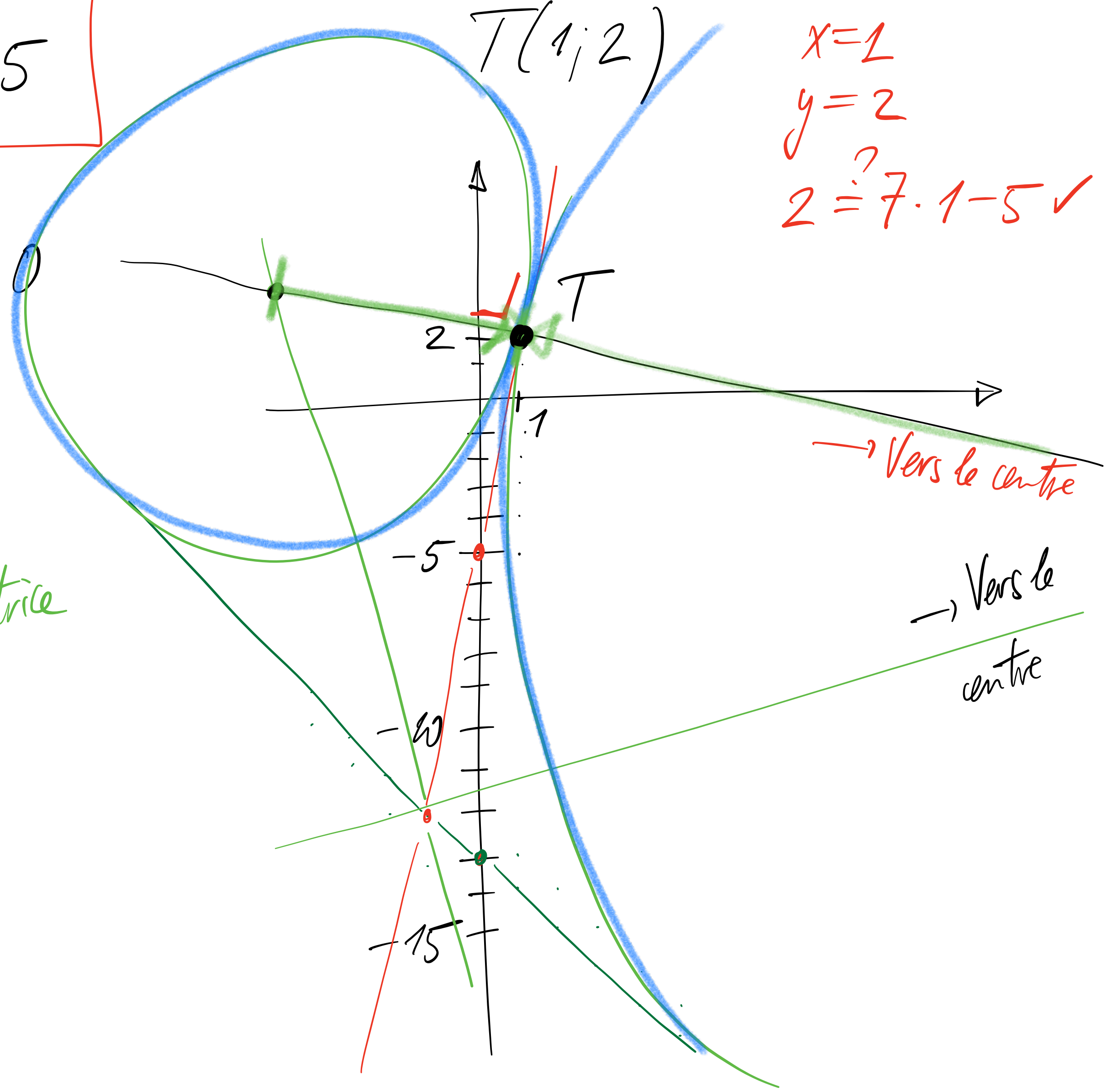
$y = 2$

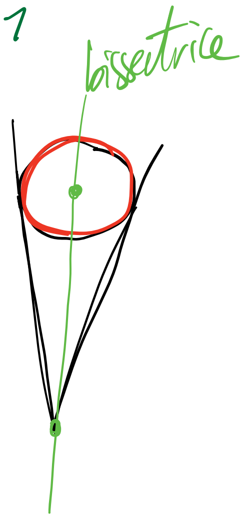
$2 \overset{?}{=} 7 \cdot 1 - 5$ ✓

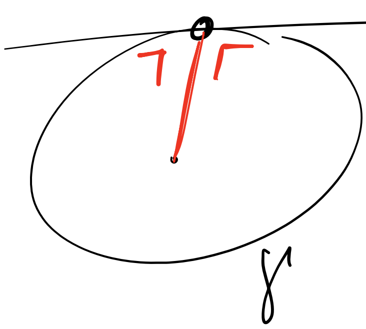
$x + y + 13 = 0$

$y = -x - 13$

$-\frac{1}{1}$




$t$ est tangente au cercle $\gamma$

$$y = 7x - 5 \Leftrightarrow 7x - y - 5 = 0$$

$$ax + by + c = 0$$

$$x + y + 13 = 0$$

$$\boxed{\text{Bissectrices :}}$$

$$\frac{7x - y - 5}{\sqrt{7^2 + (-1)^2}} = \pm \frac{x + y + 13}{\sqrt{1 + 1}}$$

$$\frac{7x - y - 5}{\sqrt{50}} = \pm \frac{x + y + 13}{\sqrt{2}} \quad \Big) \cdot \sqrt{2}$$

$$7x - y - 5 \cdot \frac{\sqrt{2}}{\sqrt{50}} = \pm (x + y + 13)$$

$$(7x - y - 5) \cdot \frac{1}{5} = \pm (x + y + 13) \quad \Big) \cdot 5$$

$$7x - y - 5 = \pm 5(x + y + 13)$$

$$7x - y - 5 = 5x + 5y + 65 \qquad\qquad 7x - y - 5 = -5x - 5y - 65$$

$$2x - 6y - 70 = 0 \qquad\qquad 12x + 4y + 60 = 0$$

$$\boxed{x - 3y - 35 = 0} \quad \perp \quad \boxed{3x + y + 15 = 0}$$

$$\perp \quad ax + by + c = 0$$

$$bx - ay + k = 0 \quad \perp$$

Équation de la $\perp$ à $d_1$ par $T$ :

$$7x - y - 5 = 0$$

$$\perp$$

$$x + 7y + k = 0 \quad \text{par } T(1;2)$$

$$1 + 14 + k = 0 \;/\; k = -15$$

$d_1$ $\boxed{x+7y-15=0}$

On cherche les intersections de $d_1$ avec les bissectrices:

$C_1 \begin{cases} x+7y-15=0 \\ x-3y-35=0 \end{cases}$

$C_2 \begin{cases} x+7y-15=0 \\ 3x+y+15=0 \end{cases}$

$r_1 = \|\overrightarrow{C_1T}\|$

$r_2 = \|\overrightarrow{C_2T}\|$

$10y = -20$

$y=-2 \,/\, x=29$

$-20y+60=0$

$y=3 \,/\, x=-6$

$C_1(29;-2)$

$C_2(-6;3)$

$\overrightarrow{C_1T} = \begin{pmatrix} -28 \\ 4 \end{pmatrix}$

$\overrightarrow{C_2T} = \begin{pmatrix} 7 \\ -1 \end{pmatrix}$

$\|\overrightarrow{C_1T}\| = \sqrt{(-28)^2+4^2}$

$= \sqrt{800} = 10\sqrt{8} = 20\sqrt{2}$

$\|\overrightarrow{C_2T}\| = \sqrt{49+(-1)^2}$

$= \sqrt{50} = 5\sqrt{2}$

$\gamma_1 : (x-29)^2+(y+2)^2 = 800$

$\gamma_2 : (x+6)^2+(y-3)^2 = 50$