

Ex 2.1.4

$$\gamma_1: x^2 + y^2 - 16x - 20y + 115 = 0$$

$$x^2 - 16x + 64 + y^2 - 20y + 100 = -115 + 64 + 100$$

$$(x-8)^2 + (y-10)^2 = 49$$

$$\Rightarrow C_1(8; 10) \text{ et } r_1 = 7$$

$$\gamma_2: x^2 + y^2 + 8x - 10y + 5 = 0$$

$$x^2 + 8x + 16 + y^2 - 10y + 25 = -5 + 16 + 25$$

$$(x+4)^2 + (y-5)^2 = 36$$

$$C_2(-4; 5) \text{ et } r_2 = 6$$

$$\vec{C_1C_2} = \begin{pmatrix} -4 \\ 5 \end{pmatrix} - \begin{pmatrix} 8 \\ 10 \end{pmatrix} = \begin{pmatrix} -12 \\ -5 \end{pmatrix} \Rightarrow \|\vec{C_1C_2}\| = \sqrt{144 + 25} = 13 = 7 + 6 = r_1 + r_2$$

\Rightarrow les cercles sont tangents extérieurement.