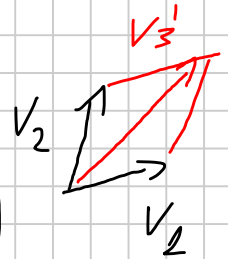


4. Determinare le equazioni cartesiane delle bisettrici (ma quante sono queste bisettrici?) degli angoli formati dalle rette  $2x + 3y = 5$  e  $x - y + 2 = 0$ .

$$\begin{cases} r_1: 2x + 3y = 5 & V_1' = (-3, 2) \Rightarrow V_1 = \frac{V_1'}{\|V_1'\|} = \left( \frac{3}{\sqrt{13}}, \frac{-2}{\sqrt{13}} \right) \\ r_2: x - y + 2 = 0 & V_2' = (1, 1) \Rightarrow V_2 = \frac{V_2'}{\|V_2'\|} = \left( \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \right) \end{cases}$$

$$\Rightarrow V_3' = \left( \frac{1}{\sqrt{2}} + \frac{3}{\sqrt{13}}, 1 + \frac{1}{\sqrt{2}} - \frac{2}{\sqrt{13}} \right) =$$

$$= \left( \frac{\sqrt{13} + 3\sqrt{2}}{\sqrt{26}}, \frac{\sqrt{13} - 2\sqrt{2}}{\sqrt{26}} \right) \Rightarrow V_3 = (3\sqrt{2} + \sqrt{13}, -2\sqrt{2} + \sqrt{13})$$



$$r_3: P_0 + \delta V_3 \quad P_0 = r_1 \cap r_2 \quad \begin{cases} 2x + 3y = 5 \\ x - y + 2 = 0 \end{cases} \quad \begin{cases} 5y = 9 & y = \frac{9}{5} \\ x = -\frac{1}{5} \end{cases}$$

$$r_3: ax + by + c = 0 \quad a = 2\sqrt{2} - \sqrt{13}, \quad b = 3\sqrt{2} + \sqrt{13}$$

$$\Rightarrow -\frac{1}{5}(2\sqrt{2} - \sqrt{13}) + \frac{9}{5}(3\sqrt{2} + \sqrt{13}) + c = 0 \Rightarrow c = \frac{1}{5}(2\sqrt{2} - \sqrt{13} - 27\sqrt{2} - 9\sqrt{13})$$

$$\Rightarrow c = -5\sqrt{2} - 2\sqrt{13} \Rightarrow r_3: (2\sqrt{2} - \sqrt{13})x + (3\sqrt{2} + \sqrt{13})y - (5\sqrt{2} + 2\sqrt{13}) = 0$$

$$r_1 \perp r_3: (3\sqrt{2} + \sqrt{13})x - (2\sqrt{2} - \sqrt{13})y + c = 0$$

$$\Rightarrow -\frac{1}{5}(3\sqrt{2} + \sqrt{13}) - \frac{9}{5}(2\sqrt{2} - \sqrt{13}) + c = 0$$

$$\Rightarrow c = \frac{1}{5}(3\sqrt{2} + \sqrt{13} + 18\sqrt{2} - 9\sqrt{13}) = \frac{21}{5}\sqrt{2} - \frac{8}{5}\sqrt{13}$$

$$\Rightarrow r_5: (3\sqrt{2} + \sqrt{13})x - (2\sqrt{2} - \sqrt{13})y + \left( \frac{21}{5}\sqrt{2} - \frac{8}{5}\sqrt{13} \right) = 0$$