

A(-3,3) B(-2,4) C(1,5) $\alpha, \beta, \gamma = ?$
 $x^2 + y^2 + \alpha x + \beta y + \gamma = 0$

A(-3,3) $9 + 9 - 3\alpha + 3\beta + \gamma = 0$
 B(-2,4) $4 + 16 - 2\alpha + 4\beta + \gamma = 0$
 C(1,5) $1 + 25 + \alpha + 5\beta + \gamma = 0$

$$\begin{cases} -3\alpha + 3\beta + \gamma = -18 & R_1 \\ -2\alpha + 4\beta + \gamma = -20 & R_2 \\ \alpha + 5\beta + \gamma = -26 & R_3 \end{cases} \Rightarrow \begin{cases} 2\alpha - 4\beta - \gamma = 20 & R_1 \\ \alpha + 5\beta + \gamma = -26 & R_2 \end{cases}$$

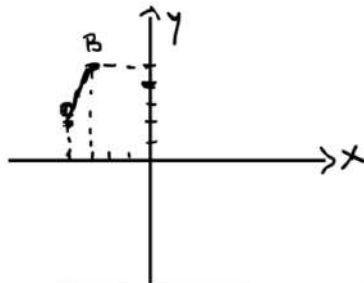
$$\Rightarrow \begin{matrix} R_1 - R_2 \\ R_2 \\ R_3 \end{matrix} \begin{cases} \alpha + \beta = -2 \\ 2\alpha - 4\beta - \gamma = 20 \\ \alpha + 5\beta + \gamma = -26 \end{cases} \Rightarrow \begin{matrix} R_1 - R_2 \\ R_2 + R_3 \\ R_3 \end{matrix} \begin{cases} \alpha + \beta = -2 \\ 3\alpha + \beta = 6 \\ \alpha + \beta + \gamma = -26 \end{cases}$$

$R_1: \alpha + \beta = -2$
 $R_2: 3\alpha + \beta = 6$
 $R_1 - R_2: -2\alpha = 4 \Rightarrow \alpha = -\frac{4}{2} \Rightarrow \alpha = -2$
 $\alpha + \beta = -2 \Rightarrow -2 + \beta = -2 \Rightarrow \beta = 0$
 $\alpha + \beta + \gamma = -26 \Rightarrow -2 + 0 + \gamma = -26 \Rightarrow \gamma = -24$

$\alpha = -2$
 $\beta = 0$
 $\gamma = -24$
 $x^2 + y^2 - 2x - 24 = 0$

$C(-\frac{\alpha}{2}, -\frac{\beta}{2}) = C(1, 0)$
 $r = \sqrt{\left(\frac{\alpha}{2}\right)^2 + \left(\frac{\beta}{2}\right)^2 - \gamma}$
 $r = \sqrt{\frac{1}{4} - (-24)} = \sqrt{\frac{1}{4} + 24} = \sqrt{\frac{1 + 96}{4}} = \sqrt{\frac{97}{4}} = \frac{\sqrt{97}}{2}$

$(x - x_0)^2 + (y - y_0)^2 = r^2$
 $(x - 1)^2 + y^2 = \frac{97}{4}$



Ⓙ: ?

C (-4; 2)
B (-3; 5)

$$R = \overline{CB} = \sqrt{(x_c - x_B)^2 + (y_c - y_B)^2} = \sqrt{(-4 + 3)^2 + (2 - 5)^2} = \sqrt{1 + 9}$$

$$\boxed{R = \sqrt{10}}$$

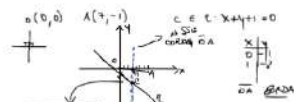
C (-4; 2) $R = \sqrt{10}$

$$(x - x_c)^2 + (y - y_c)^2 = R^2$$

$$(x + 4)^2 + (y - 2)^2 = 10$$

$$x^2 + 16 + 8x + y^2 + 4 - 4y = 10$$

$$\boxed{x^2 + y^2 + 8x - 4y + 10 = 0}$$



$H = \left(\frac{x_0 + x_1}{2}, \frac{y_0 + y_1}{2} \right) = \left(\frac{0+1}{2}, \frac{0+(-1)}{2} \right) = \left(\frac{1}{2}, -\frac{1}{2} \right)$

COND. DI PERPENDICOLARITÀ $m_{OA} = -\frac{1}{m_{AB}}$
 $m_{OA} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - 0}{1 - 0} = -1$
 $m_{AB} = -\frac{1}{-1} = 1$

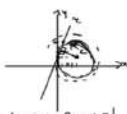
$y - y_1 = m(x - x_1)$
 $y + \frac{1}{2} = 1 \left(x - \frac{1}{2} \right)$
 $y + \frac{1}{2} = x - \frac{1}{2}$
 $2y + 1 = 2x - 1$
 $-2x + 2y + 2 = 0$
 $-x + y + 1 = 0$

$R_1: x + y + 1 = 0$
 $R_2: -x + y + 1 = 0$
 $R_1 + R_2: 2x + 2y + 2 = 0 \implies x + y + 1 = 0$

$y = -x - 1$
 $C(0, -1)$
 $d = \frac{|Ax_0 + By_0 + C|}{\sqrt{A^2 + B^2}} = \frac{|1 \cdot 0 + 1 \cdot (-1) + 1|}{\sqrt{1^2 + 1^2}} = \frac{0}{\sqrt{2}} = 0$

$C \left(-\frac{A}{A^2 + B^2}, -\frac{B}{A^2 + B^2} \right) \in \ell: x + y + 1 = 0$
 $\left(-\frac{1}{1^2 + 1^2}, -\frac{1}{1^2 + 1^2} \right) = \left(-\frac{1}{2}, -\frac{1}{2} \right)$
 $-x - y + 2 = 0$
 $x + y = 2$

$x^2 + y^2 + 2x + 2y = 0$
 $(x+1)^2 + (y+1)^2 = 2$
 $R_1: x + y = 2$
 $R_2: x - y = 0$
 $2x = 2 \implies x = 1$
 $1 - y = 0 \implies y = 1$
 $x^2 - 2x + 1 + y^2 - 2y + 1 = 0$
 $(x-1)^2 + (y-1)^2 = 0$



$$C(4; 2)$$

$$z: y = 3x - 2$$

$$\begin{matrix} x & y \\ 0 & 2 \\ 1 & 1 \end{matrix}$$

$$x_c = 4 \quad y_c = 2$$

$$-3x + y - 2 = 0$$

$$3x - y + 2 = 0$$

$$a = 3$$

$$b = -1$$

$$c = 2$$

$$d(C, z) = \frac{|ax_c + by_c + c|}{\sqrt{a^2 + b^2}}$$

$$d(C, z) = \frac{|3 \cdot 4 + (-1) \cdot 2 + 2|}{\sqrt{3^2 + 1}}$$

$$Rd(C, z) = \frac{|12 - 2 + 2|}{\sqrt{10}} = \frac{12}{\sqrt{10}}$$

$$\boxed{R = \frac{12}{\sqrt{10}}}$$

$$(x - x_0)^2 + (y - y_0)^2 = R^2$$

$$(x - 4)^2 + (y - 2)^2 = \frac{144}{10}$$

$$x^2 + 16 - 8x + y^2 + 4 - 4y = \frac{144}{10}$$

$$10x^2 + 10y^2 - 80x - 40y + 200 = 144$$

$$10x^2 + 10y^2 - 80x - 40y + 56 = 0$$

$$\boxed{5x^2 + 5y^2 - 40x - 20y + 28 = 0}$$

$$x^2 + y^2 + ax + by + c = 0 \quad \text{НЕТОЧНО}$$

$$C(C_1, z) = \left(-\frac{a}{2}, -\frac{b}{2}\right) \quad \begin{matrix} a = -8 \\ b = -4 \end{matrix}$$

$$\begin{cases} x^2 + y^2 - 8x - 4y + c = 0 \\ y = 3x + 2 \end{cases} \quad \begin{matrix} \Delta(y) = 0 \\ \text{Составляем } \Delta(y) \end{matrix}$$

$$x^2 + (3x + 2)^2 - 8x - 4(3x + 2) + c = 0$$

$$x^2 + 9x^2 + 12x + 4 - 8x - 12x - 8 + c = 0$$

$$10x^2 - 8x - 4 + c = 0$$

$$\Delta(x) = 0 \quad \Delta(x) = 64 - 4(10)(-4 + c) = 0$$

$$64 + 160 - 40c = 0$$

$$224 - 40c = 0 \Rightarrow c = \frac{224}{40} = \frac{28}{5}$$

$$x^2 + y^2 - 8x - 4y + \frac{28}{5} = 0$$

$$\boxed{5x^2 + 5y^2 - 40x - 20y + 28 = 0}$$

