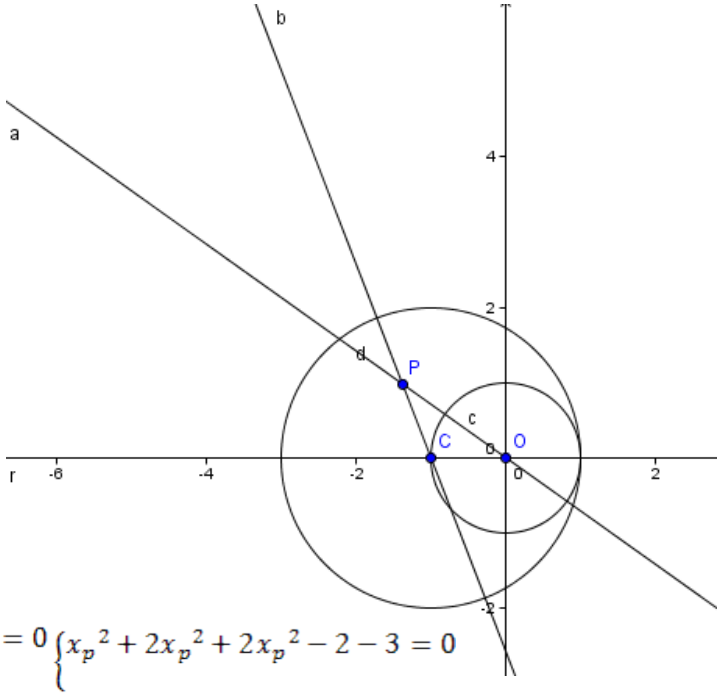
Soluzione inviata da G. Tricella (Liceo Scientifico “L. da Vinci” - Gallarate)

2)



Γ_2: $x^2 + y^2 - 1 = 0$

Γ_1: $(x+1)^2 + y^2 - 4 = 0$

r: $y = 0$

P(x_p;y_p) (-2< x_p<0)

PO=$\sqrt{(x_p{}^2 + y_p{}^2)} = 1 + y_p =$

$= x_p{}^2 + y_p{}^2 = y_p{}^2 + 2y_p + 1 = x_p{}^2 - 2y_p - 1 = 0$

PC=$\sqrt{(x_p+1)^2 + y_p{}^2)} = 2 - y_p =$

$= x_p{}^2 + 2x_p{}^2 + 1 + y_p{}^2 = y_p{}^2 - 4y_p + 4 =$

$= x_p{}^2 + 2x_p{}^2 + 4y_p - 3 = 0$

$\begin{cases} x_p{}^2 + 2x_p{}^2 + 4y_p - 3 = 0 \\ x_p{}^2 - 2y_p - 1 = 0 \end{cases} \begin{cases} x_p{}^2 + 2x_p{}^2 + 4y_p - 3 = 0 \\ 2y_p = x_p{}^2 - 1 \end{cases} \begin{cases} x_p{}^2 + 2x_p{}^2 + 2x_p{}^2 - 2 - 3 = 0 \end{cases}$

$\begin{cases} 3x_p{}^2 + 2x_p{}^2 - 5 = 0 \end{cases} \begin{cases} x_{p1} = 1\ SNA \\ x_{p2} = -\frac{5}{3} \end{cases}$

$y_p = \frac{8}{9}$ raggio della circonferenza di centro P.

3)

$xy - 3x - 4y + 24 = 0$

$x, y \in Z$

$y = x + n$

$x(x+n) - 3x - 4(x+n) + 24 = 0$

$x^2 + nx - 3x - 4x - 4n + 24 = 0$

$x^2 + (n-7)x + 4(6-n) = 0$

$$x = \frac{\left(7 - n \pm \sqrt{n^2 - 14n + 49 - 16(6-n)}\right)}{2}$$

Impongo $n^2 - 14n + 49 - 16(6-n) = m^2$

$n^2 - 14n + 49 + 16n - 96 = m^2$

$n^2 + 2n - 47 = m^2$

$n^2 + 2n + 1 - 48 = m^2$

$(n+1)^2 = m^2 + 48$

$n + 1 = a$

$a^2 = m^2 + 48$

$a = m + b$

$m = a - b$

$$a^2 = a^2 - 2ab + b^2 + 48$$

$$2ab = 48 + b^2$$

$$a = \frac{48 + b^2}{2b}$$

$$a = \left(\frac{48}{b} + b\right) \times \frac{1}{2}$$

I divisori di 48 sono $\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 12, \pm 16, \pm 24, \pm 48$

b	a	m
1 SNA	24,5	23,5
2	13	11
3 SNA	9,5	6,5
4	8	4
6	7	1
8	7	-1
12	8	-4
16 SNA	9,5	-6,5
24	13	-11
48 SNA	24,5	-23,5
-1 SNA	-24,5	-23,5
-2	-13	-11
-3 SNA	-9,5	-6,5
-4	-8	-4
-6	-7	-1
-8	-7	1
-12	-8	4
-16 SNA	-9,5	6,5
-24	-13	11
-48 SNA	-24,5	23,5

$$(n+1)^2 = m^2 + 48$$

$$n = -1 \pm \sqrt{m^2 + 48}$$

m	n_1	n_2
11	12	-14
4	7	-9
1	6	-8
-1	6	-8
-4	7	-9
-11	12	-14

$$x = \frac{\left(7 - n \pm \sqrt{n^2 - 14n + 49 - 16(6-n)}\right)}{2}$$

$$x = \frac{\left(7 - n \pm \sqrt{n^2 + 2n - 47}\right)}{2}$$

n	x_1	x_2
12	3	-8
7	2	-2
6	1	0

-8	8	7
-9	10	6
-14	16	5

$y = x + n$

n	x	y
12	3	15
7	2	9
6	1	7
-8	8	0
-9	10	1
-14	16	2
12	-8	4
7	-2	5
6	0	6
-8	7	-1
-9	6	-3
-14	5	-9