$$x^2 + y^2 - 8x + 10y + 25 = 0 \qquad\qquad y + 9 = 0$$

$$\begin{cases} x^2 + y^2 - 8x + 10y + 25 = 0 \\ \\ y + 9 = 0 \implies y = \boxed{-9} \end{cases}$$
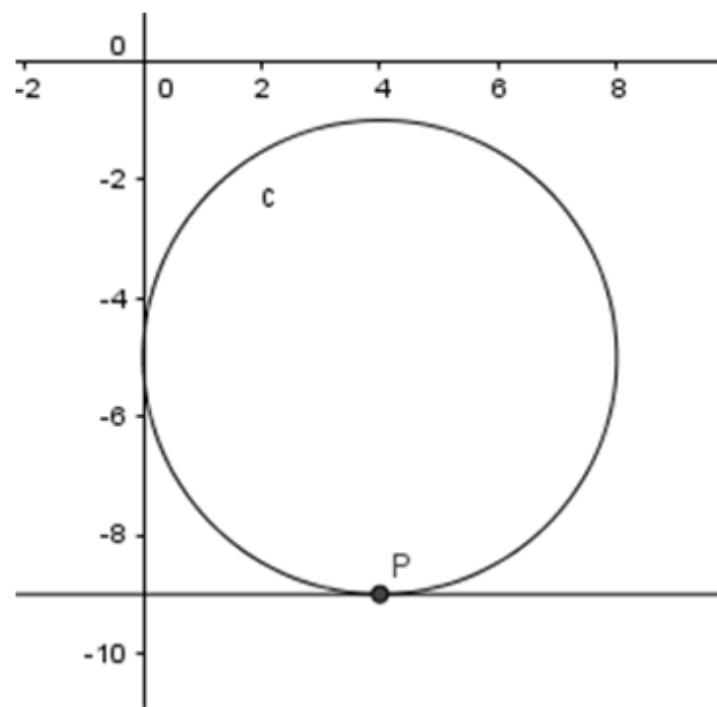
$$x^2 + 81 - 8x - 90 + 25 = 0$$

$$x^2 - 8x + 16 = 0$$

$$\Delta = 64 - 64 = 0$$

RETTA TANGENTE

$$x = \frac{8 \pm 0}{2} = 4 \qquad P(4, -9)$$

$$y = -9$$

$\underline{\text{N } 184}$

$$\begin{cases} x^2 + y^2 - 6x - 4y + 4 = 0 \\ x - y - 4 = 0 \implies x = y + 4 \end{cases}$$

$(y+4)^2 + y^2 - 6(y+4) - 4y + 4 = 0$

$y^2 + 16 + 8y + y^2 - 6y - 24 - 4y + 4 = 0$

$2y^2 - 2y - 4 = 0 \qquad y^2 - y - 2 = 0$
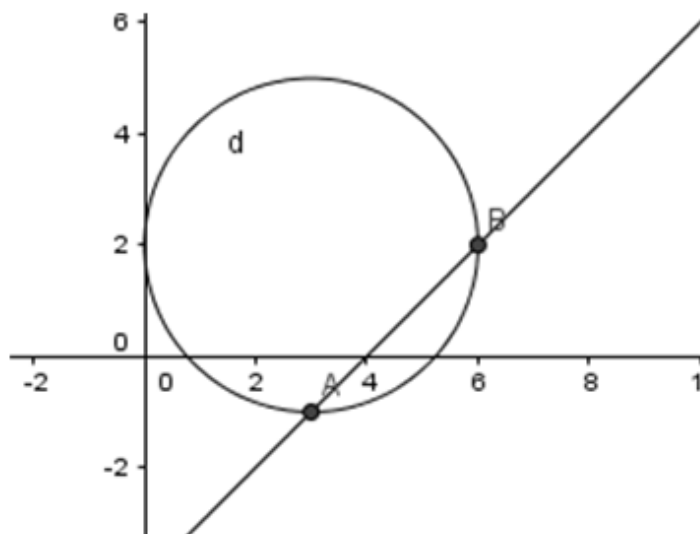
$\Delta = 1 + 8 = 9 > 0$

RETTA SECANTE

$A(3, -1)$

$B(6, 2)$

$y = \dfrac{1 \pm \sqrt{1+8}}{2} = \dfrac{1 \pm 3}{2} = \begin{cases} 2 \implies x = 6 \\ -1 \implies x = 3 \end{cases}$

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$$\begin{cases} x^2 + y^2 - 50 = 0 \\ 3x + 4y + 40 = 0 \implies 4y = -3x - 40 \end{cases}$$

$$\Downarrow$$

$$y = -\frac{3}{4}x - 10$$

$$x^2 + \left(-\frac{3}{4}x - 10\right)^2 - 50 = 0$$

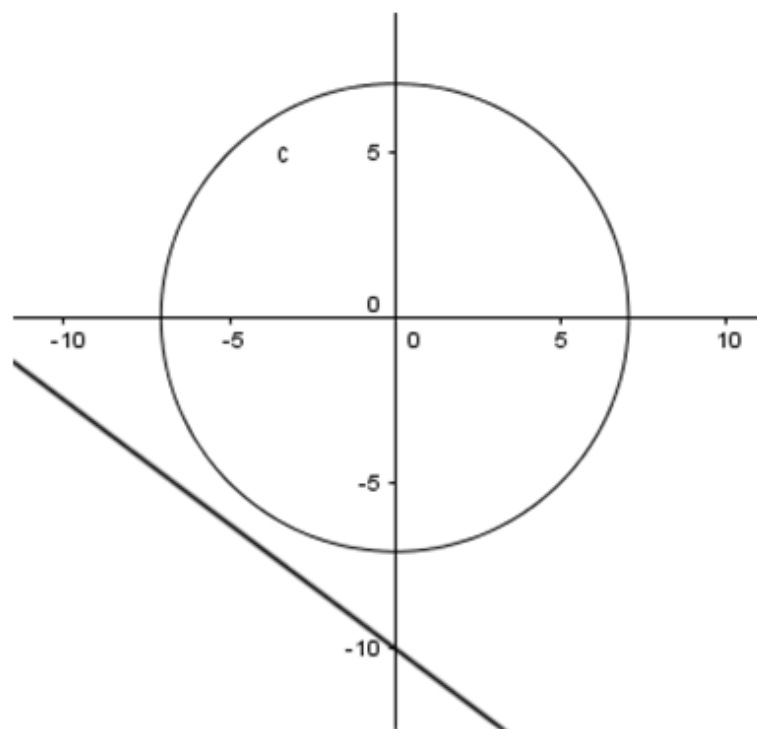$$x^2 + \frac{9}{16}x^2 + 15x + 100 - 50 = 0$$

$$\frac{25}{16}x^2 + 15x + 50 = 0$$

$$\frac{5}{16}x^2 + 3x + 10 = 0$$

$$\Delta = 9 - \overset{1}{\cancel{4}}\left(\frac{5}{16}\right)\overset{5}{\cancel{10}} =$$

$$\cancel{\times 2}$$

$$= 9 - \frac{25}{2} = -\frac{7}{2} < 0 \quad \text{RETTA ESTERNA}$$

EQ. DELLA CIRCONF. DATI 3 PUNTI
(NON ALLINEATI)

$$A(3,4) \quad B(0,-5) \quad C(-2,-1)$$

$$x^2 + y^2 + ax + by + c = 0$$

INCOGNITE

$A \rightarrow$
$B \rightarrow$
$C \rightarrow$

$$\begin{cases} 9 + 16 + 3a + 4b + c = 0 \\ 0 + 25 + 0 - 5b + c = 0 \\ 4 + 1 - 2a - b + c = 0 \end{cases} \qquad \begin{cases} 3a + 4b + c = -25 \\ -5b + c = -25 \\ -2a - b + c = -5 \end{cases}$$

$$\begin{cases} 3a + 4b + 5b - 25 = -25 \\ c = 5b - 25 \\ -2a - b + 5b - 25 = -5 \end{cases} \qquad \begin{cases} 3a + 9b = 0 \\ \underline{} \\ -2a + 4b = 20 \end{cases} \qquad \begin{cases} a = -3b \\ \underline{} \\ 6b + 4b = 20 \end{cases}$$

$$\begin{cases} a = -6 \\ c = 10 - 25 = -15 \\ b = 2 \end{cases}$$

$$\boxed{x^2 + y^2 - 6x + 2y - 15 = 0}$$