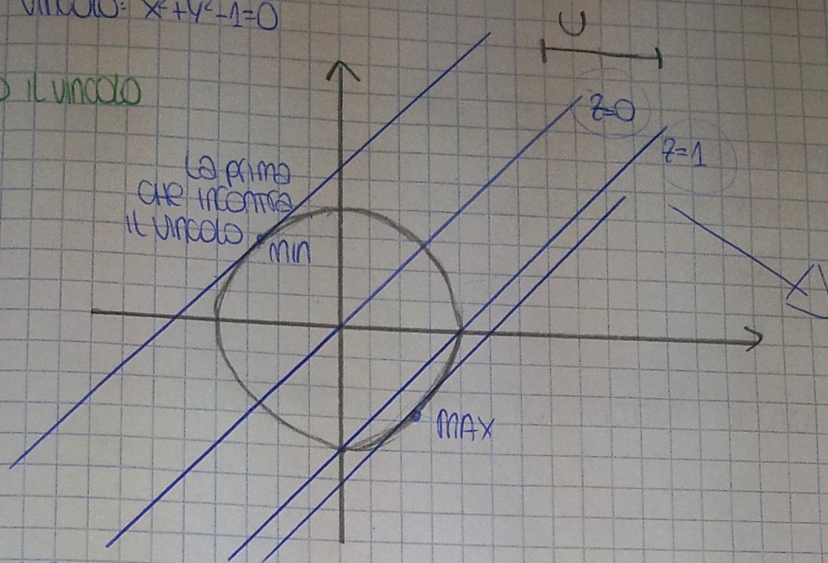


SCHEDA n°3:

$Z = X - Y$ vincolo: $x^2 + y^2 - 1 = 0$

① disegno il vincolo



$Z=0 \quad X-Y=0 \rightarrow X=Y$

$Z=K \quad X-Y-K=0 \rightarrow Y=X-K$

$K=1 \quad X-Y=1 \rightarrow Y=X-1$

② linee di livello

③ calcolo la tangente (linee di livello generico
vincolo
 $\Delta=0$)

$$\begin{cases} Y=X-K \\ X^2+Y^2-1=0 \end{cases} \rightarrow X^2+(X-K)^2-1=0 \rightarrow X^2+X^2+K^2-2XK-1=0 \rightarrow 2X^2+K^2-2XK-1=0$$

a. TROV K

$$\Delta = (-2K)^2 - 4(2)(K^2-1) = 4K^2 - 8K^2 + 8 = 0$$

$$-4K^2 + 8 = 0 \quad K^2 = 2 \rightarrow K = \pm\sqrt{2}$$

b. TROV X (SOSTITUISCO K)

① $K = -\sqrt{2}$

$$\begin{cases} 2X^2+K^2-2XK-1=0 \\ K=-\sqrt{2} \end{cases} \rightarrow 2X^2+2+2\sqrt{2}X-1=0 \rightarrow 2X^2+2\sqrt{2}X+1=0 \rightarrow (\sqrt{2}X+1)^2$$

$$X = \frac{-1}{\sqrt{2}}$$

② $K = \sqrt{2}$

$$\begin{cases} 2X^2+K^2-2XK-1=0 \\ K=\sqrt{2} \end{cases} \rightarrow 2X^2+2-2\sqrt{2}X-1=0 \rightarrow 2X^2-2\sqrt{2}X+1=0 \rightarrow (\sqrt{2}X-1)^2$$

$$X = \frac{1}{\sqrt{2}}$$

c. TROV Y (SOSTITUISCO X ^o K NELLA FUNZIONE)

$$Y = X - K \rightarrow Y = \frac{1}{\sqrt{2}} - \sqrt{2} \rightarrow Y = \frac{-1 + 2}{\sqrt{2}} \rightarrow Y = \frac{1}{\sqrt{2}} \rightarrow Y = \frac{\sqrt{2}}{2} \quad \left(-\frac{1}{\sqrt{2}}; \frac{1}{\sqrt{2}}\right) \quad Z = \sqrt{2}$$

$$y = x - k \rightarrow y = \frac{1}{\sqrt{2}} - \sqrt{2} \rightarrow y = -\frac{1}{\sqrt{2}}$$

$$\left(\frac{1}{\sqrt{2}}; -\frac{1}{\sqrt{2}}\right) \quad z = \sqrt{2}$$

④ confronto le z :

$$z = -\sqrt{2} \quad \text{minimo assoluto} \quad \left(-\frac{1}{\sqrt{2}}; \frac{1}{\sqrt{2}}\right)$$

$$z = \sqrt{2} \quad \text{massimo assoluto} \quad \left(\frac{1}{\sqrt{2}}; -\frac{1}{\sqrt{2}}\right)$$

SCHEDA n° 10

$$z = x^2 + y^2$$

vincolo: triangolo di vertici $(1;0)$ $(2;0)$ $(1;1)$

