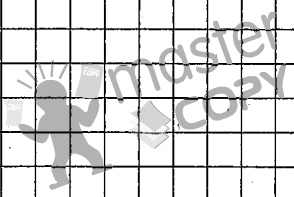
CLAUDIO BONANNO

pagine.dm.unipi.it/cromanus/didattica

esame :

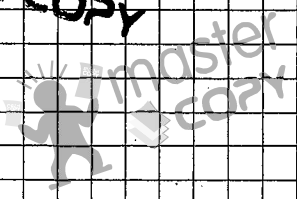




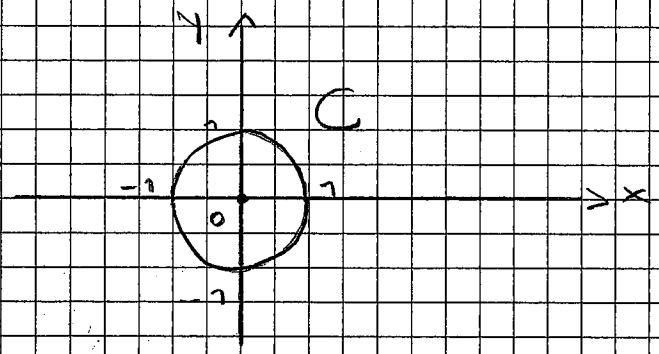
ricevimento : GIOVEDÌ 16 00

tutorato : LUNEDÌ 16 00





master COPY



$$C = \{(x,y) \in \mathbb{R}^2 : \sqrt{x^2+y^2} = 1\}$$

$$C = \{(x,y) \in \mathbb{R}^2 : -1 \leq x \leq 1,\ y = \sqrt{1-x^2}\} \cup$$

$$\cup \{(x,y) \in \mathbb{R} : -1 \leq y \leq 1,\ x = \sqrt{1-y^2}\}$$

$$g(x,y) = \sqrt{x^2+y^2}$$

$$C = \{(x,y) \in \mathbb{R}^2 : g(x,y) = 1\}$$

$$g_+ : [-1;1] \to \mathbb{R} \qquad g_+(x) = \sqrt{1-x^2}$$

$$\text{grafico } g_+ = \{(x;y) \in \mathbb{R}^2 : x \in [-1;1],\ y = g_+(x)\}$$

$$g_- : [-1;1] \to \mathbb{R} \qquad g_-(x) = -\sqrt{1-x^2}$$

$$\text{grafico } g_- = \{(x;y) \in \mathbb{R}^2 : x \in [-1;1],\ y = g_-(x)\}$$

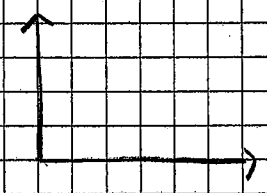
$$C = \{(x,y) \in \mathbb{R}^2 : g(x,y) = 1\} = \text{grafico } g_+(x) \cup \text{grafico } g_-(x)$$

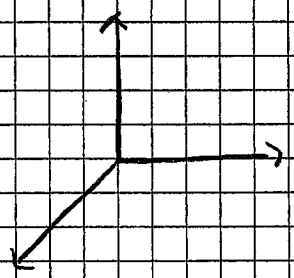
$\mathbb{R}^m$ ⟶ SPAZIO FISICO in cui vengono definite le funzioni

$P \in \mathbb{R}^m$ sistema di coordinate ed origine O

$P = (P_1, P_2, \dots, P_m)$ $\quad P_i \in \mathbb{R}$

$\mathbb{R}^2$ $\quad P(x, y)$ $\qquad\qquad$ $\mathbb{R}^3$ $\quad (x, y, z)$





DEFINIZIONE : Si dice DISTANZA su $\mathbb{R}^m$ una funzione

$d : \mathbb{R}^m \times \mathbb{R}^m \to \mathbb{R}$ t.c

i) POSITIVITÀ $\quad \forall P, Q \in \mathbb{R}^m$ si ha $d(P, Q) \geq 0$ e

$d(P, Q) = 0 \iff P = Q$

ii) SIMMETRIA $\quad \forall P, Q \in \mathbb{R}^m$ si ha $d(P, Q) = d(Q, P)$

iii) DISUGUAGLIANZA TRIANGOLARE

$\forall P, Q, R \in \mathbb{R}^m$ si ha che

$d(P,Q) \leq d(P,R) + d(R,Q)$

esempio

$$d(P,Q) = \begin{cases} 1 & P \neq Q \\ 0 & P = Q \end{cases}$$

$$\begin{cases} P \neq Q \\ Q \neq R \\ P \neq R \end{cases} \quad n \leq 2$$

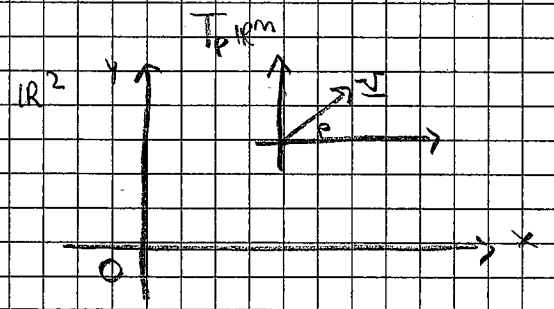
$$\begin{cases} P \neq Q \\ R = P \end{cases} \quad n \leq 0 + 1$$

$$\begin{cases} P \neq Q \\ R = Q \end{cases} \quad n \leq 1$$

DISTANZA EUCLIDEA

$$\begin{cases} P = (P_1, \dots, P_m) \\ Q = (Q_1, \dots, Q_m) \end{cases}$$

$$d(P,Q) = \sqrt{(P_1 - Q_1)^2 + \dots + (P_m - Q_m)^2}$$



Indichiamo con $T_P\mathbb{R}^m$ (spazio tangente ad $\mathbb{R}^m$ in P) l'insieme dei vettori $\underline{v} = \begin{pmatrix} v_1 \\ \vdots \\ v_m \end{pmatrix}$ applicati in P. $T_P\mathbb{R}^m$ è uno spazio vettoriale isomorfo ad $\mathbb{R}^m$.