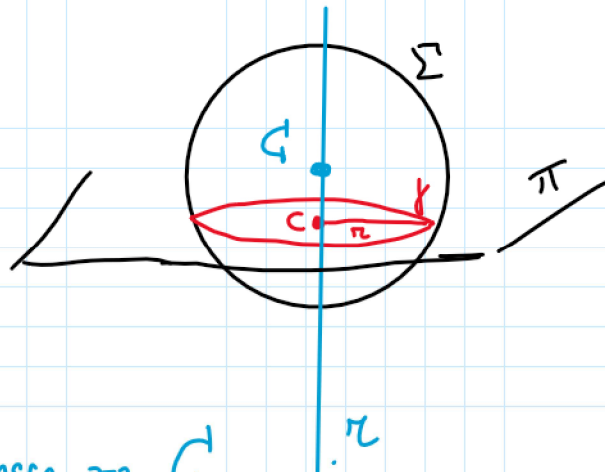


ESAME 26.07.2019

TROVA CENTRO E RAGGIO DI

$$\gamma: \begin{cases} x^2 + y^2 + z^2 - 2x - 4y + 1 = 0 & (\text{SFERA}) \Sigma \\ x + y - 4 = 0 & (\text{PIANO}) \pi \end{cases}$$



γ = CIRCONFERENZA
 C = CENTRO?
 R = raggio

r $\begin{cases} \nearrow \text{PASSA PER} \\ \searrow \perp \pi \end{cases}$ $\left. \begin{matrix} \text{CIRCONFERENZA} \\ \text{della sfera} \end{matrix} \right\} \rightarrow r \text{ contiene } C$

$\left. \begin{matrix} \text{CIRCONFERENZA} \\ \text{della sfera} \end{matrix} \right\} \begin{matrix} \text{"x"} \\ \uparrow \\ -\frac{a}{2} \\ \text{"y"} \\ \uparrow \\ -\frac{b}{2} \\ \text{"z"} \\ \uparrow \\ -\frac{c}{2} \end{matrix} = (1, 2, 0)$

$$r = \begin{cases} x = 1 + lt \\ y = 2 + mt \\ z = 0 + nt \end{cases}$$

l, m, n ? so che $r \perp \pi$ $\begin{cases} a=l \\ b=m \\ c=n \end{cases} a, b, c \in \pi$

$$\pi \quad \begin{matrix} \downarrow x & \downarrow y & \downarrow z \\ x + y - 4 = 0 \\ a=1 & b=1 & c=0 \end{matrix}$$

$$r = \begin{cases} x = 1 + t \\ y = 2 + t \\ z = 0 \end{cases}$$

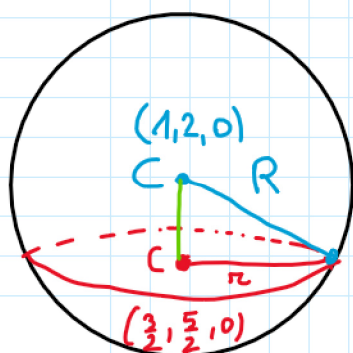
$$r = \begin{cases} x = 1 + t \\ y = 2 + t \end{cases}$$

$$C = \begin{cases} \pi \\ \pi \end{cases} \begin{cases} X = 1+t \\ Y = 2+t \\ Z = 0 \end{cases}$$

$$X + Y - 4 = 0 \rightarrow 1+t + 2+t - 4 = 0$$

$$2t - 1 = 0 \quad t = \frac{1}{2}$$

$$\begin{cases} X = 1 + \frac{1}{2} = \frac{3}{2} \\ Y = 2 + \frac{1}{2} = \frac{5}{2} \\ Z = 0 \end{cases} \quad C\left(\frac{3}{2}, \frac{5}{2}, 0\right)$$



$$r = ?$$

$$r = \sqrt{R^2 - d^2}$$

$$R = \sqrt{\underbrace{\left(-\frac{a}{2}\right)^2 + \left(-\frac{b}{2}\right)^2}_{\text{CENTRO di } \Sigma} + \underbrace{\left(-\frac{c}{2}\right)^2}_{\text{T.M. } \Sigma} - d}$$

$$R = \sqrt{(1)^2 + (2)^2 + (0)^2 - 1} = \sqrt{1+4-1} = \sqrt{4} = 2$$

$$X^2 + Y^2 + aX + bY + c = 0$$

CIRCONF.

$$C\left(-\frac{a}{2}, -\frac{b}{2}\right)$$

$$r = \sqrt{\left(-\frac{a}{2}\right)^2 + \left(-\frac{b}{2}\right)^2 - c}$$

$$X^2 + Y^2 + Z^2 + aX + bY + cZ + d = 0$$

SFERA

$$C\left(-\frac{a}{2}, -\frac{b}{2}, -\frac{c}{2}\right)$$

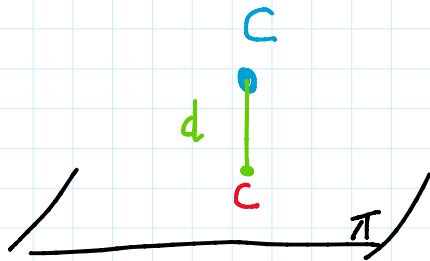
$$R = \sqrt{\left(-\frac{a}{2}\right)^2 + \left(-\frac{b}{2}\right)^2 + \left(-\frac{c}{2}\right)^2 - d}$$

$$R = \frac{1}{2} \sqrt{a^2 + b^2 + c^2 - 4d}$$

$$0 = \sqrt{1(a^2 + b^2 + c^2 - 4d)}$$

$$R = \sqrt{\frac{1}{4}(a^2 + b^2 + c^2 - 4d)}$$

$$R = \sqrt{\frac{a^2}{4} + \frac{b^2}{4} + \frac{c^2}{4} - d}$$



$$d = Cc$$

d = distanza tra C e π

$$C(1, 2, 0) \quad c\left(\frac{3}{2}, \frac{5}{2}, 0\right)$$

$$d = \sqrt{\left(1 - \frac{3}{2}\right)^2 + \left(2 - \frac{5}{2}\right)^2}$$

$$= \sqrt{\frac{1}{4} + \frac{1}{4}} = \sqrt{\frac{1}{2}}$$

$$r = \sqrt{R^2 - d^2} = \sqrt{4 - \frac{1}{2}} = \sqrt{\frac{7}{2}}$$

$$c\left(\frac{3}{2}, \frac{5}{2}, 0\right) \quad r = \sqrt{\frac{7}{2}}$$



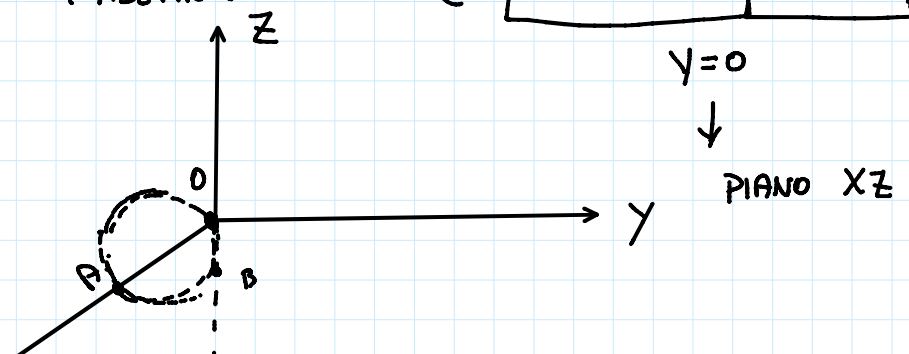
ϕ

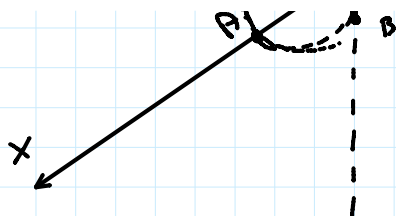
15.01.2019

SCRIVERE L'EQ. DI UNA SFERA E L'EQ.

DEL PIANO LA CUI INTERSEZIONE È LA

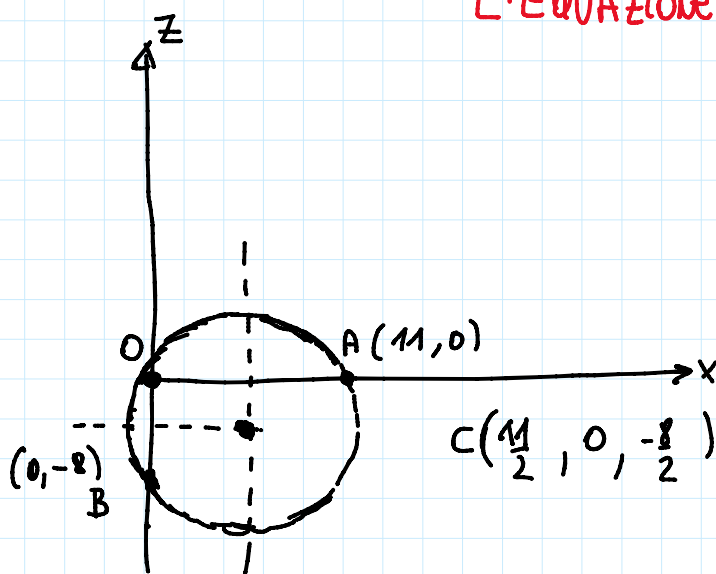
CIRCONFERENZA PASSANTE PER $O(0,0,0)$ $A(11,0,0)$ $B(0,0,-8)$





IL PIANO È xz

L'EQUAZIONE È $\boxed{y=0}$



$C(\frac{11}{2}, \alpha, -4)$

la y si
muove
come
vuole
per formare
il centro
di Σ

(SFERA $C(\frac{11}{2}, \alpha, -4)$

INFINITE SFERE

RAGGIO : DISTANZA CENTRO DI Σ
È $O(0,0,0)$

$$R = \sqrt{\left(\frac{11}{2} - 0\right)^2 + (\alpha - 0)^2 + (-4 - 0)^2} = \sqrt{\frac{121}{4} + \alpha^2 + 16}$$

$$\Sigma \Rightarrow (x - x_c)^2 + (y - y_c)^2 + (z - z_c)^2 = R^2$$

$$\left(x - \frac{11}{2}\right)^2 + (y - \alpha)^2 + (z + 4)^2 = \left(\sqrt{\frac{121}{4} + \alpha^2 + 16}\right)^2$$

$$x^2 - 11x + \frac{121}{4} + y^2 - 2\alpha y + \alpha^2 + z^2 + 8z + 16 = \frac{121}{4} + \alpha^2 + 16$$

$$x^2 + y^2 + z^2 - 11x - 2\alpha y + 8z = 0$$

PER VOI

1) CONSIDERA LA $\Sigma_1: X^2 + Y^2 + Z^2 - 8Z = 0$.

SCRIVI LA Σ_2 TANGENTE ESTERNAMENTE A Σ_1

IN $C(0, 0, 8)$ E AVENTE RAGGIO $R = \frac{3}{4}$ DEL RAGGIO DI Σ_1

2) SCRIVERE L'EQUAZIONE DI UNA SFERA DI CENTRO

$C(-10, 3, 15)$ E TG AL PIANO $\alpha: 4x + 7z = 0$

(FACILE)