Ricevimento studenti – lunedì 6 febbraio 2023

Titolo nota 06/02/2023

$$A = \begin{bmatrix} 1 & -t & 2 \\ 0 & -5 & (t-4) \\ 0 & 0 & 1 \end{bmatrix}; \quad P_A(\lambda) = \begin{bmatrix} (1-\lambda) & -t & -2 \\ 0 & (-5-\lambda) & (t-4) \\ 0 & 0 & (1-\lambda) \end{bmatrix}$$

$$P_A(\lambda) = (1-\lambda)^2 \cdot (-5-\lambda)^1$$

$\hookrightarrow \lambda_1 = -5 \; ; \; m_g(-5) = m_a(-5) = 1$

$$\boxed{\lambda_2 = 1} \qquad \begin{bmatrix} 0 & -t & 2 \\ 0 & -6 & (t-4) \\ 0 & 0 & 0 \end{bmatrix} = H$$

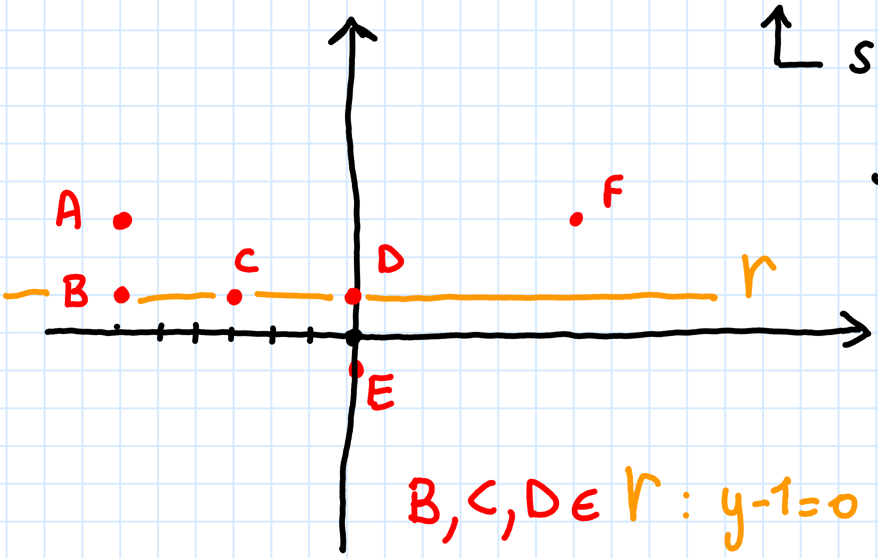
A è diagonalizzabile se e solo se $m_g(1) = 2$

$$2 = m_g(1) = 3 - rg\,H \Rightarrow rg\,H = 1 \Rightarrow \det \begin{bmatrix} -t & 2 \\ -6 & (t-4) \end{bmatrix} = 0$$

$$\Rightarrow -t(t-4) + 12 = 0 \Rightarrow t^2 - 4t - 12 = 0 \Rightarrow (t-6)\cdot(t+2) = 0 \begin{cases} \nearrow t_1 = 6 \\ \searrow t_2 = -2 \end{cases}$$

$A(-6,3)$; $B(-6,1)$; $C(-3,1)$; $D(0,1)$; $E(0,-1)$; $F(6,3)$

↑ sono corretti ??



se lo fossero non esisterebbe una conica passante per quei 6 punti

$B, C, D \in r : y - 1 = 0$

$$ax^2 + bxy + cy^2 + dx + ey + f = 0$$

$$(a, b, c) \neq (0, 0, 0)$$

$a \neq 0$ divide tutto per a

$$x^2 + b'xy + c'y^2 + d'x + e'y + f' = 0$$

5

$A(10, \sqrt{44}, 3)$. Su $r: y = x - 8 = 0$ trovare due punti B e C tali che $\hat{ABC}$ equilatero.

$$\begin{bmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix} \rightarrow \begin{array}{ccc} 0 & 0 & a \\ 0 & 0 & b \\ -1 & +1 & c \end{array} \quad \vec{R}$$

$$0(x - 10) + 0(y - \sqrt{44}) + 1(z - 3) = 0$$

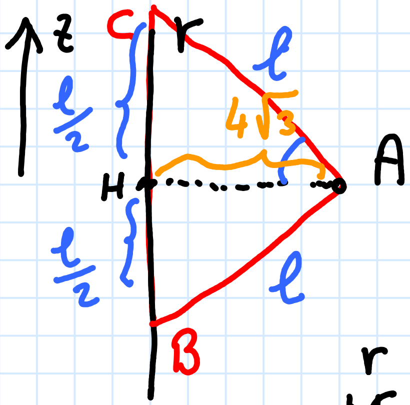
$$\pi : z - 3 = 0$$

$$\{H\} = \pi \cap r : \begin{cases} y = 0 \\ x - 8 = 0 \\ z - 3 = 0 \end{cases} \qquad H(8, 0, 3)$$

$$A(10, \sqrt{44}, 3)$$

altezza $\hat{ABC} = d(H, A) = \sqrt{2^2 + 44 + 0^2} =$

$$= \sqrt{48} = 4 \cdot \sqrt{3}$$



$\frac{\ell}{2} = ?$

$AH = 4\sqrt{3}$ $\quad \ell = ? = 8$ $\quad \frac{\ell}{2} = 4$

r

$+4$ $C(8,0\ 3+4)$ $\quad (8,0,7)$

$H(8,0,3)$

-4 $B(8,0,3-4)$ $\quad (8,0,-1)$

$B(8,0,z)$

$A(10,\sqrt{44},3)$

$$d(A,B) = \ell = 8$$

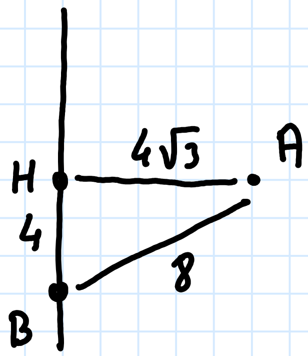
$$\sqrt{(10-8)^2+(\sqrt{44}-0)^2+(3-z)^2} = 8$$

$$4+44+(3-z)^2 = 64$$

$$(3-z)^2 = 16 \qquad (z-3)^2 = 16$$

$$z-3 = \pm 4$$

$$z = 3 \pm 4 \;\begin{cases} 7 \\ -1 \end{cases}$$



$H(8,0,3)$

$B(8,0,z)$

$d(B,H) = 4$

$$\sqrt{(8-8)^2+(0-0)^2+(z-3)^2} = 4 \qquad |z-3| = 4$$