29/1/19

(7) $\omega = f\,dx + g\,dy$

$f = 2\cos(x-3y) + h(2x+y)\cdot\sin(x-3y)$

$g = k\cdot\cos(x-3y) + 3(2x+y)\cdot\sin(x-3y)$

I. ω è def. su $\mathbb{R}^2$; chiusa $\Leftrightarrow$ esatta; chiusa:

$$\frac{\partial f}{\partial y} = \cancel{6\sin(\cdot)} + h\cdot\sin(\cdot) - 3h(2x+y)\cdot\cos(\cdot)$$

$$\frac{\partial g}{\partial x} = -k\cdot\sin(\cdot) + \cancel{6\cdot\sin(\cdot)} + 3(2x+y)\cdot\cos(\cdot)$$

$h = -1 \qquad k = 1$

II. $U = (2x+y)\cdot\cos(x-3y)$

$$\frac{\partial U}{\partial x} = \cancel{2\cdot\cos(\cdot)} - \underline{(2x+y)\cdot\sin(\cdot)}$$

$$\frac{\partial U}{\partial y} = \cos(\cdot) + \cancel{3(2x+y)\cdot\sin(\cdot)}$$

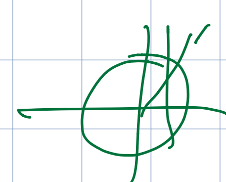
$f = 2\cancel{\cos(x-3y)} + \underline{h(2x+y)\cdot\sin(x-3y)}$ $\qquad h = -1$

$g = k\cdot\cos(x-3y) + \cancel{3(2x+y)\cdot\sin}(x-3y)$ $\qquad k = 1$

14/2/19 (4) 3×3 ortog. $\det = -1$ $\underline{\mathrm{tr} = 0}$

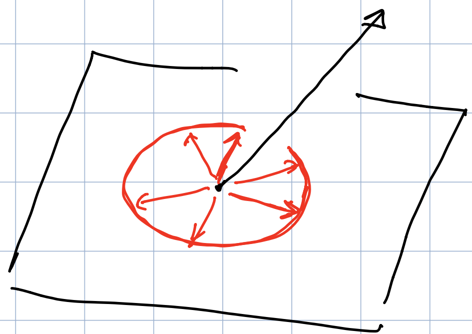
$$\left(\begin{array}{cc|c} c & -s & 0 \\ s & c & 0 \\ \hline 0 & 0 & \pm 1 \end{array}\right) \longrightarrow \begin{pmatrix} c & -s & 0 \\ s & c & 0 \\ 0 & 0 & -1 \end{pmatrix}$$

$2c - 1 = 0 \qquad c = 1/2$



$\Rightarrow$ rotaz. di angolo $\pi/3$ intorno a retta ℓ
o rifl. rispetto $\ell^\perp$

25/6/19 (3) Vettori ortog. a $\begin{pmatrix}4\\-3\\1\end{pmatrix}$ e unitari.



$v^\perp = \mathrm{Span}\left(\begin{pmatrix}3\\4\\0\end{pmatrix}, \begin{pmatrix}3\\4\\0\end{pmatrix} \wedge \begin{pmatrix}4\\-3\\1\end{pmatrix}\right)$

$= \mathrm{Span}\left(\frac{1}{5}\begin{pmatrix}3\\4\\0\end{pmatrix}, \frac{1}{5\sqrt{2}}\begin{pmatrix}-4\\+3\\+25\end{pmatrix}\right)$

Risp. $\cos\vartheta \cdot \uparrow + \sin\vartheta \cdot \uparrow$

$\vartheta \in [0, 2\pi)$

(6) $X \subset \mathbb{P}^7(\mathbb{R})$ $\dim(X) = 4$

max dim Y t.c. $X \cap Y = \emptyset$

X = proiez. di $\tilde{X} \setminus \{0\}$, $\tilde{X} \subset \mathbb{R}^8$ $\dim \tilde{X} = 5$

Y . . . $\tilde{Y} \setminus \{0\}$, $\tilde{Y} \subset \mathbb{R}^8$

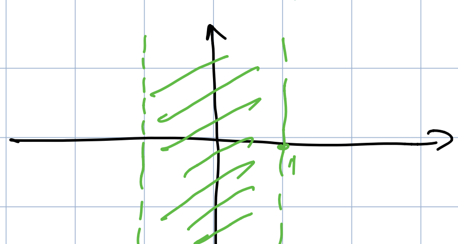
$\tilde{X} \cap \tilde{Y} = \{0\}$; max $\dim \tilde{Y} = 3 \Rightarrow$ max $\dim Y = 2$

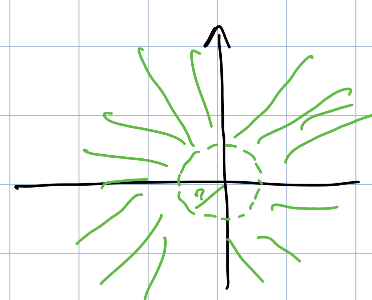
13/9/19 (2) $\Omega = \{(x,y) \in \mathbb{R}^2 : \ |x| < 1 \quad x^2 + y^2 > a^2\}$

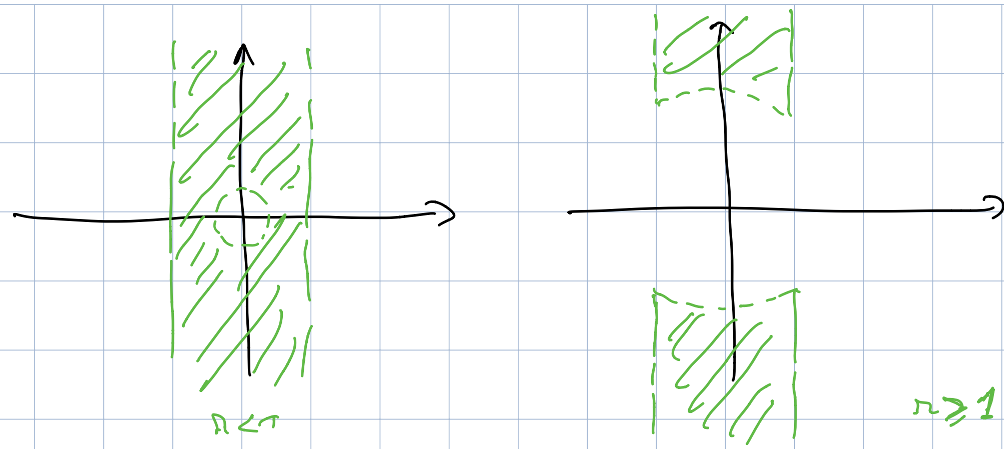
Per quali a esistono in Ω forme chiuse non esatte?

" " " Ω è non sempl. connesso ?

Ω ha buchi?







③ $X \subset \mathbb{P}^7$ $\quad \dim X = 4 \quad$ max dim Y , $\quad X \cap Y =$ pts

$\tilde{X}^{(5)} \subset \mathbb{R}^8 \quad \tilde{Y} \quad \tilde{X} \cap \tilde{Y} = L \quad \dim L = 1$

max dim $\tilde{Y} = 4 \implies$ max dim $Y = 3$

4/11/14 ⑦ $A = \{(x,y) : 1 < |x-3| < 2$ oppure $1 < |y+3| < 2\}$

17/7/18 (5)

$$(k+1)x^2 + 2yz = k$$

$$(k+1)x^2 + y^2 - z^2 - k = 0$$

dep. for $k=0$ & $k=-1$

$k<-1$	$-+--$	$++-+$	ip. ell.
$-1<k<0$	$++--$	ip. ip	
$k>0$	$++-+$	ip. ell.	

$$x^2+y^2-z^2+1=0$$