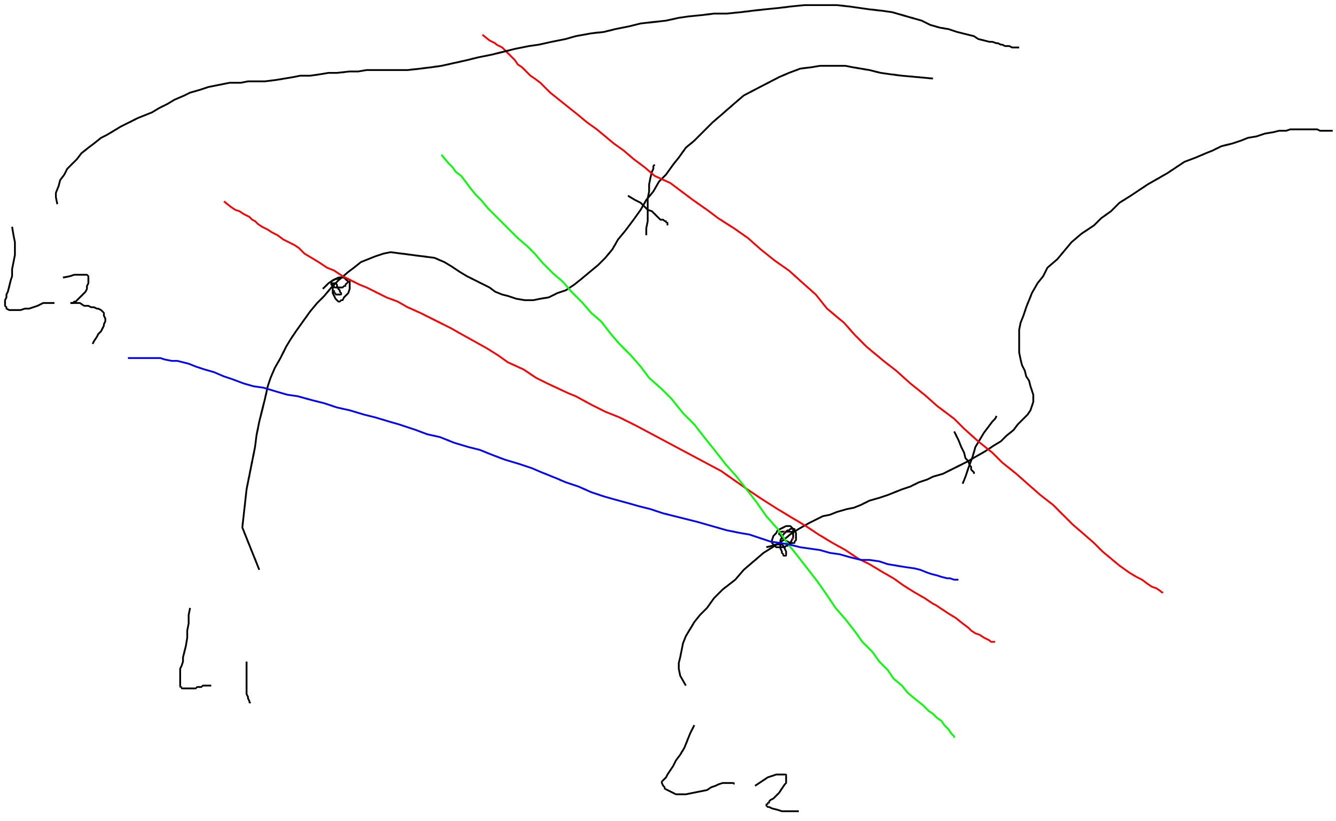
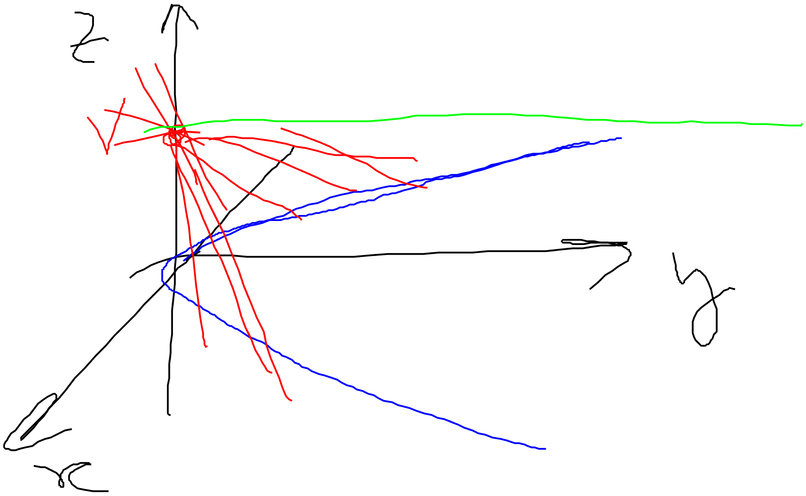


L3
L1
L2

Es. 10 $\quad \mathcal{C}: \begin{cases} z=0 \\ y=x^2 \end{cases}$

b) cono con $\mathcal{C}$ come direttrice e vertice $V \equiv (0,0,1)$



$P_\alpha \equiv (\alpha, \alpha^2, 0)$

retta r_α per V e P_α:

$$\frac{x-0}{\alpha-0} = \frac{y-0}{\alpha^2-0} = \frac{z-1}{0-1} = \beta$$

$$\begin{cases} x = \alpha\beta \\ y = \alpha^2\beta \\ z = 1-\beta \end{cases} \qquad \begin{cases} \text{---} \\ \text{---} \\ \beta = 1-z \end{cases}$$

$$\begin{cases} x = \alpha(1-z) \\ y = \alpha^2(1-z) \end{cases} \qquad \begin{cases} \alpha = \dfrac{x}{1-z} \\ y = \alpha^2(1-z) \end{cases}$$

$$y = \frac{x^2}{(1-z)^{\cancel{2}}} \cancel{(1-z)}$$

retta per l'ey$_\infty$

$$(1-z)y - x^2 = 0 \qquad \frac{x-0}{0} = \frac{y-0}{1} = \frac{z-1}{0}$$

$$(1-1)0 - 0^2 = 0 \qquad \begin{cases} x = 0 \\ y = 0 \\ z = 1 \end{cases}$$

$$\begin{cases} \alpha(1-z) - x = 0 \\ \alpha^2(1-z) - y = 0 \end{cases}$$

$$\begin{vmatrix} (1-z) & -x & 0 \\ 0 & (1-z) & -x \\ (1-z) & 0 & -y \end{vmatrix} = 0$$

$$\begin{vmatrix} (1-z) & -x & 0 \\ 0 & (1-z) & -x \\ 0 & x & -y \end{vmatrix} = 0$$

$$(1-z)\left((1-z)(-y) + x^2\right) = 0$$

c) cilindro con $\mathcal{C}$ come direttrice e generatrici

$\parallel \bar{r}$ $\begin{cases} x = 2y \\ z = y - 1 \end{cases}$ $\begin{cases} x = 2\gamma \\ y = \gamma \\ z = \gamma - 1 \end{cases}$

$(l, m, n) \sim (2, 1, 1)$

Retta s_α per P_α, $\parallel \bar{r}$

$$\frac{x - \alpha}{2} = \frac{y - \alpha^2}{1} = \frac{z - 0}{1} = \beta$$

$$\begin{cases} x = \alpha + 2\beta \\ y = \alpha^2 + \beta \\ z = \beta \end{cases} \qquad \begin{cases} \text{---} \\ \text{---} \\ \beta = z \end{cases}$$

$$\begin{cases} x = \alpha + 2z \\ y = \alpha^2 + z \end{cases} \qquad \begin{cases} \alpha = x - 2z \\ y = \alpha^2 + z \end{cases}$$

$$y = (x - 2z)^2 + z \qquad \begin{cases} \alpha + 2z - x = 0 \\ \alpha^2 + z - y = 0 \end{cases}$$

$$\begin{vmatrix} 1 & (2z-x) & 0 \\ 0 & 1 & (2z-x) \\ 1 & 0 & (z-y) \end{vmatrix} = 0$$

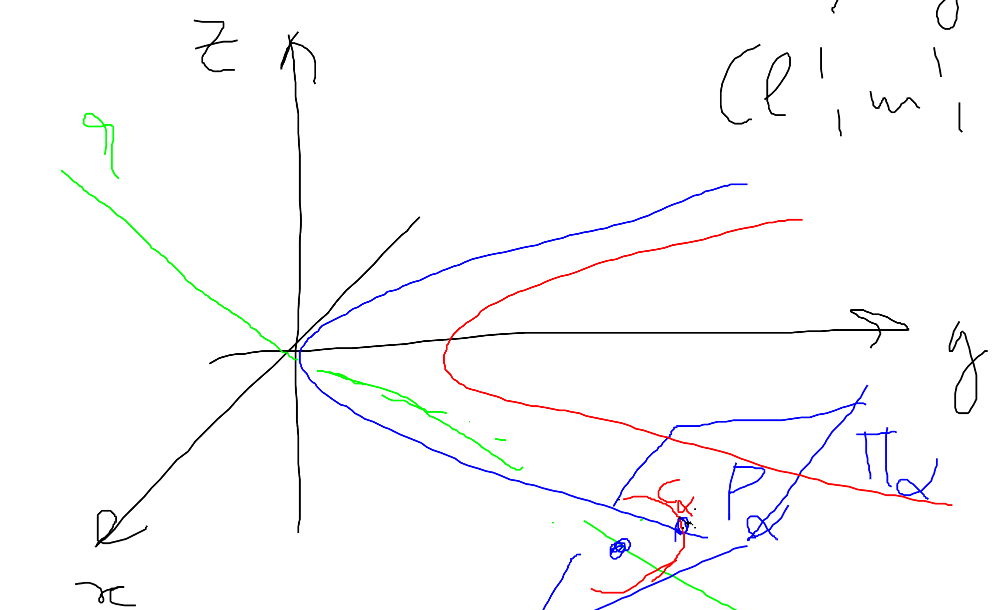
$$\begin{vmatrix} 1 & (2z-x) & 0 \\ 0 & 1 & (2z-x) \\ 0 & (x-2z) & (z-y) \end{vmatrix} = 0$$

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

---

a) sup. di rot facendo ruotare C attorno ad q: $\begin{cases} x = z \\ y = 0 \end{cases}$

$(l', m', n') \sim (1, 0, 1)$

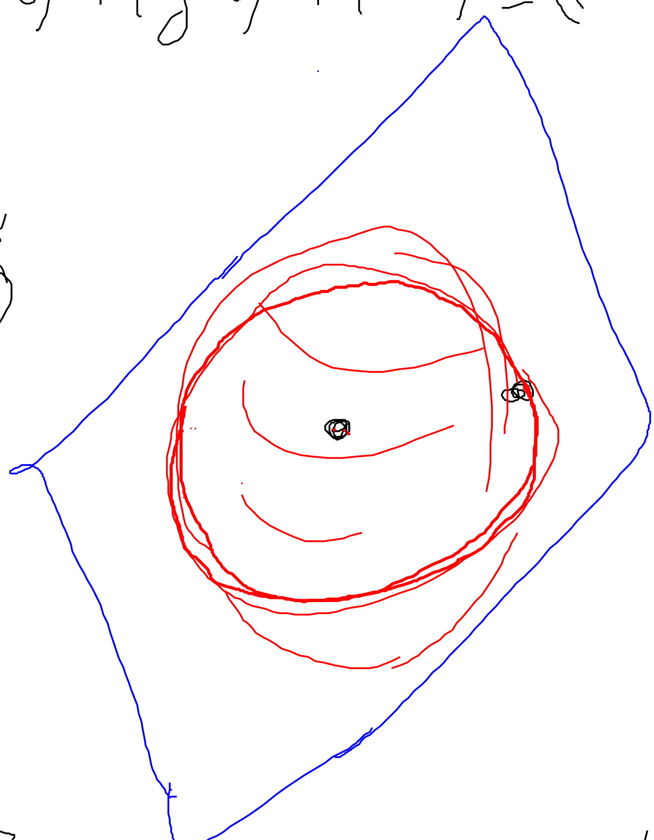


$y = x^2 + 1$

Scrivo C_α, circonferenza per P_α centrata su $r \cap \Pi_\alpha$, dove Π_α è il piano per P_α, $\perp r$.

$$C_\alpha \begin{cases} \Pi_\alpha : & 1\cdot(x-\alpha)+0\cdot(y-\alpha^2)+1(z-0)=0 \\ \Sigma_\alpha : & (x-0)^2+(y-0)^2+(z-0)^2=(\alpha-0)^2+(\alpha^2-0)^2+(0-0)^2 \end{cases}$$

sfera per P_α con centro O



$$\begin{cases} x-\alpha+z=0 \\ x^2+y^2+z^2=\alpha^2+\alpha^4 \end{cases} \qquad \begin{cases} \alpha = x+z \\ \_\_\_\_\_\_ \end{cases}$$

supf : $x^2+y^2+z^2=(x+z)^2+(x+z)^4$

ruotando attorno all'asse y

$\begin{cases} z=0 \\ y-x^2=0 \end{cases}$

$y-\left(\pm\sqrt{x^2+z^2}\right)^2=0$

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

attorno all'asse x

$\begin{cases} z=0 \\ y-x^2=0 \end{cases}$

$\pm\sqrt{y^2+z^2}-x^2=0$

$\pm\sqrt{y^2+z^2}=x^2$

$y^2+z^2=x^4$

attorno all'asse z

$C:\begin{cases} z=0 \\ y-x^2=0 \end{cases}$ $\qquad P_\alpha \qquad \tilde{r}:\begin{cases} x=0 \\ y=0 \end{cases}$

$(\tilde{l},\tilde{m},\tilde{n})\approx(0,0,1)$

$$C_\alpha \begin{cases} \Pi_\alpha : 0(x-\alpha)+0(y-\alpha^2)+1(z-0)=0 \\ \Sigma_\alpha : x^2+y^2+z^2=\alpha^2+\alpha^4 \end{cases}$$

$$\text{supf}: \begin{cases} z=0 \\ x^2+y^2+z^2=\alpha^2+\alpha^4 \end{cases}$$

$$z=0$$

---

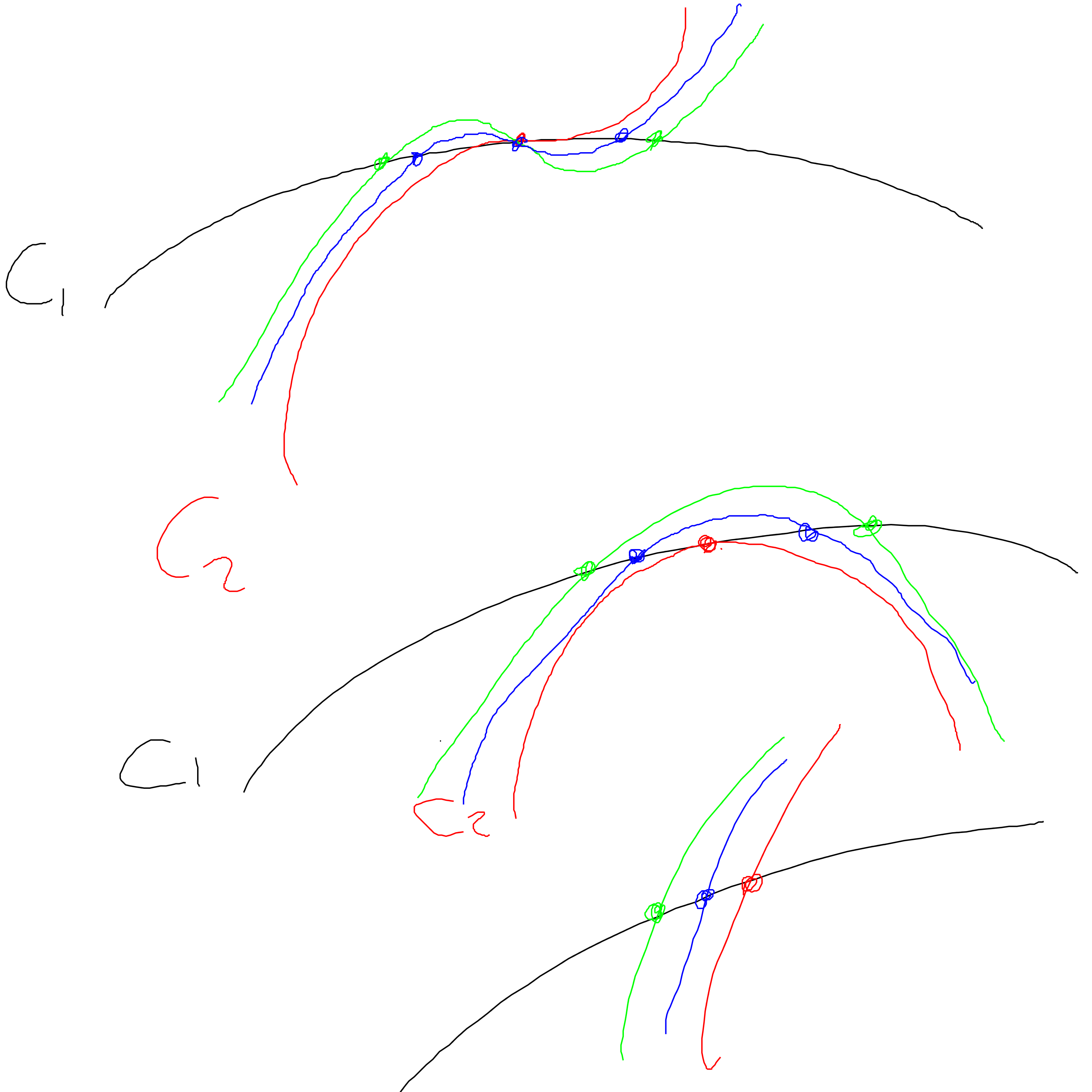
ruota C' : $\begin{cases} z=0 \\ y=x^2+1 \end{cases}$

attorno all'asse z

$$P'_\alpha \equiv (\alpha, \alpha^2+1, 0)$$

$$\begin{cases} 0(x-\alpha)+0(x-\alpha^2-1)+1(z-0)=0 \\ x^2+y^2+z^2=\alpha^2+(\alpha^2+1)^2+(0-0)^2 \end{cases}$$

$$z=0$$



C_1:

$f(x)$

$$y = a_1 x + a_2 x^2 + \dots + a_n x^n + a_{n+1} x^{n+1} + O(n+2)$$

C_2:

$$y = b_1 x + b_2 x^2 + \dots + b_n x^n + b_{n+1} x^{n+1} + O(n+2)$$

$g(x)$

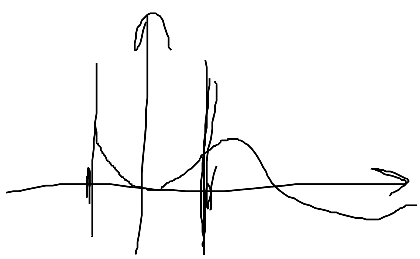
C_1, C_2 contatto di ordine n in O

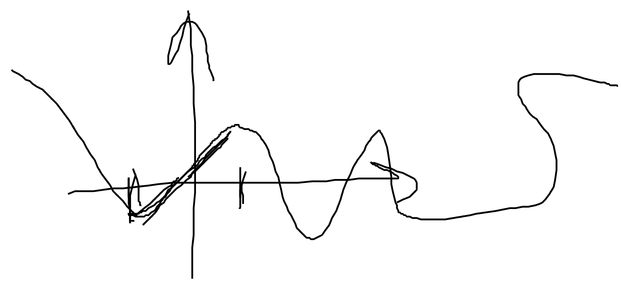
$$g(x) - f(x) =$$

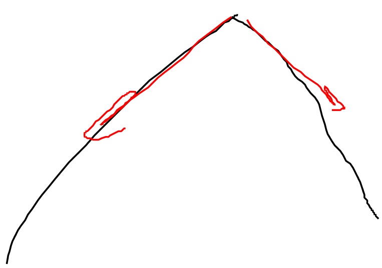
$$(b_1 - a_1)x + (b_2 - a_2)x^2 + \dots + (b_n - a_n)x^n + \boxed{\overset{\neq 0}{(b_{n+1} - a_{n+1})}\, x^{n+1} + O(n+1)}$$

$n+1$ pari

$n+1$ dispari







$$\begin{pmatrix} f'(u) & \varphi'(u) \\ f''(u) & \varphi''(u) \end{pmatrix} \neq (0,0)$$

$$= 1$$

$$\det = 0$$