

$$A = (1, 0, 0) \quad B = (y_1, y_2, 0) \quad C = (z_1, z_2, z_3) \quad .3$$



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$$\text{us } b = A \cdot C = z_1 \quad \text{us } c = A \cdot B = y_1$$

$$y_1^2 + y_2^2 = |B|^2 = 1 = \text{us } c^2 + y_2^2 \Rightarrow y_2 = |\sin c|$$

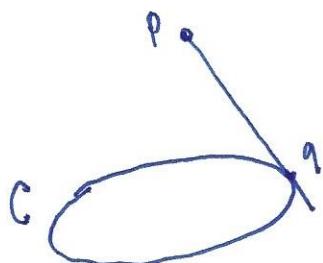
$$\begin{aligned} \text{us } \alpha &= \frac{(A \times B) \cdot (A \times C)}{|A \times B| |A \times C|} = \frac{(0, 0, y_2) \cdot (0, -z_3, z_2)}{y_2 \cdot (z_2^2 + z_3^2)^{1/2}} = \frac{z_2}{(z_2^2 + z_3^2)^{1/2}} \\ &= \frac{z_2}{|\sin b|} \quad \Rightarrow \quad z_2 = \text{us } \alpha |\sin b| \quad z_3 = |\sin \alpha| |\sin b| \end{aligned}$$

$$\Rightarrow B = (\text{us } c, |\sin c|, 0) \quad C = (\text{us } b, |\sin b| \text{us } \alpha, |\sin b| |\sin \alpha|)$$

$$\begin{aligned} &\text{us } \alpha = \frac{\text{us } a - \text{us } c}{\sin^2 a} = \frac{\frac{1}{2} - \frac{1}{4}}{\frac{3}{4}} = \frac{1}{3} \quad \text{but } \alpha = b = c = \frac{\pi}{3} \quad \text{but } \alpha = \beta = \gamma = \frac{\pi}{3} \end{aligned}$$

$$\text{area}(T) = \alpha + \beta + \gamma - \pi \quad | \geq 1$$

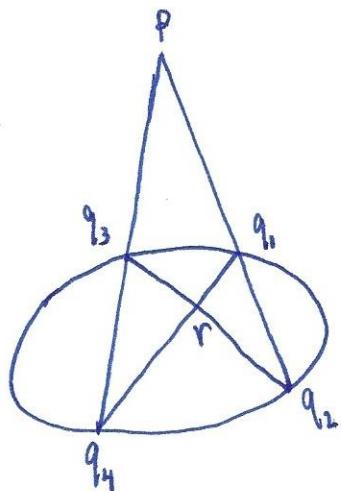
$$= 3 \arcs \text{us } \frac{1}{3} - \pi$$



$$\alpha \neq 0 \text{ iff } \left\{ \begin{array}{l} \overline{pq} \cap C = \{q\} \text{ i.e. } \\ \gamma_{N(F)}, \quad \alpha p + q \notin C \end{array} \right.$$

$$0 \neq (\alpha p + q) \wedge (\alpha p + q) = \alpha^2 pAp + 2\alpha pAq \quad (*)$$

$$\cdot pAp = 0 \quad \text{iff} \quad (*) \text{ i.e. } p \parallel p \quad \alpha = -\frac{2pAq}{pAp} \quad p \nparallel q$$



$$p = \alpha_1 q_1 + \alpha_2 q_2 + \alpha_3 q_3 + \alpha_4 q_4 \quad \{ \} \quad \rightarrow$$

$$r = \alpha_1 q_1 - \alpha_4 q_4 = -\alpha_2 q_2 + \alpha_3 q_3 \quad | \Rightarrow$$

$$\cdot 0 \neq \alpha_1, \alpha_2, \alpha_3, \alpha_4 \quad \text{iff}$$

$$(***) \quad \left\{ \begin{array}{l} 0 = \alpha_2^2 q_2 A q_2 = (p - \alpha_1 q_1) A (p - \alpha_1 q_1) = pAp - 2\alpha_1 pAq_1, \\ 0 = \alpha_3^2 q_3 A q_3 = (p - \alpha_4 q_4) A (p - \alpha_4 q_4) = pAp - 2\alpha_4 pAq_4 \end{array} \right.$$

\Leftarrow (***)

$$pAr = pA(\alpha_1 q_1 - \alpha_4 q_4) = \frac{1}{2} \left([pAp - 2\alpha_4 pAq_4] - [pAp - 2\alpha_1 pAq_1] \right)$$

$$= 0$$

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$$\gamma(t) = (\cosh r, \sinh r \cos t, \sinh r \sin t)$$

$$0 \leq t \leq 2\pi$$

$$\text{und } d_{\tilde{H}}(p, r(t)) = -Q(p, r(t)) = \cosh r \Rightarrow d_{\tilde{H}}(p, r(t)) = r$$

$$Q(r(t), r(t)) = -\cosh^2 r + \sinh^2 r \cosh^2 t + \sinh^2 r \sin^2 t =$$

$$-\cosh^2 r + \sinh^2 r = -1 \Rightarrow r(t) \in \mathbb{R}$$

$$\cosh \frac{2\pi}{n} = \frac{\cosh^2 r - \cosh \ln(r)}{\sinh^2 r} ; \quad \text{! für } n \geq 2$$

$$\Rightarrow \cosh \ln(r) = \cosh^2 r - \cosh \frac{2\pi}{n} \sinh^2 r = 1 + \sinh^2 r (1 - \cosh \frac{2\pi}{n}) \quad (*)$$

$$\cosh \ln(r) = \frac{e^{\ln(r)} + e^{-\ln(r)}}{2} \underset{n \rightarrow \infty}{\sim} 1 + \frac{\ln(r)^2}{2}$$

$$\cosh \frac{2\pi}{n} \sim 1 - \frac{1}{2} \left(\frac{2\pi}{n}\right)^2$$

folgt (*) \Rightarrow 108

$$1 + \frac{\ln(r)^2}{2} \sim 1 + \sinh^2 r \cdot \frac{1}{2} \left(\frac{2\pi}{n}\right)^2$$

$$\text{folgt } \ln(r)^2 \sim \sinh^2 r \left(\frac{2\pi}{n}\right)^2 \Leftrightarrow$$

$$L(C(p,r)) = \lim_{n \rightarrow \infty} n \cdot \ln(r) = \lim_{n \rightarrow \infty} \cancel{n} \cdot \sinh r \cdot \frac{2\pi}{n} = 2\pi \sinh r$$