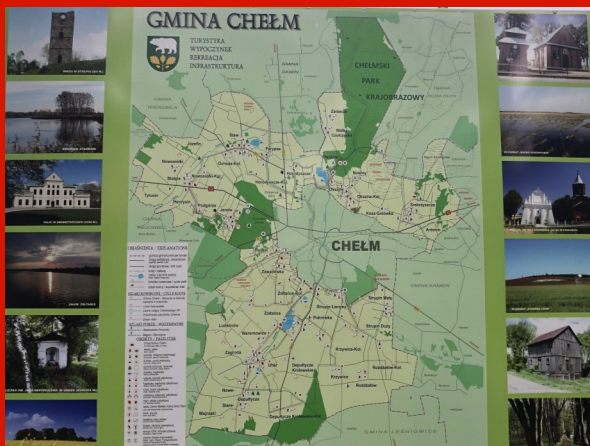


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CSI-PWSZ Flight Centre & Lab







CSI-PWSZ Mechanical Engineering State School



Prac. Zaj. / 2018-06-18

analogi $\operatorname{Re} e^{i\theta} = e^{i\alpha} + \frac{\sqrt{3}}{2}t + \frac{1}{2}$

$e^{i(\alpha-\theta)} + i\frac{\sqrt{3}}{2}e^{-i\theta}t + \frac{1}{2}e^{-i\theta}$

$\sin(\alpha-\theta) + t\frac{\sqrt{3}}{2}\cos\theta - \frac{1}{2}\sin\theta$

lic $\cos\theta \neq 0$ to $\frac{\sin(\theta-\alpha) + \frac{1}{2}\sin\theta}{\frac{\sqrt{3}}{2}\cos\theta}$, skąd

$\cos(\alpha-\theta) + \frac{\sqrt{3}}{2}\frac{\sin(\theta-\alpha) + \frac{1}{2}\sin\theta}{\frac{\sqrt{3}}{2}\cos\theta}$

$\frac{1}{2}\cos\theta = \cos(\alpha-\theta) + \sin(\frac{\alpha-\theta}{2})$

$\frac{1}{2}\frac{\sin^2\theta}{\cos\theta} + \frac{1}{2}\cos\theta$

uproszczamy więc zależność

3) $[0; \frac{\pi}{3}] \ni \alpha \Rightarrow R(\alpha) = \cos(\alpha-\theta)$

$+ \frac{1}{2\cos\theta}$

dla dowolnego zadanego $\theta \in [0; \frac{\pi}{3}]$.

Ponieważ

$(1-\theta) - \sin(\alpha-\theta)$ tę θ

$\cos(\alpha-\theta)\cos\theta - \sin\theta\sin(\alpha-\theta) = \frac{\cos\alpha}{\cos\theta}$

$R(\alpha) = \frac{2\cos\alpha + 1}{2\cos\theta}$ dla $\alpha \in [0; \frac{\pi}{3}]$.

drugiej strony $|t| \leq 1$, a więc

$\frac{\sin(\theta-\alpha) + \frac{1}{2}\sin\theta}{\frac{\sqrt{3}}{2}\cos\theta} \leq 1 \Leftrightarrow$

$\leq \sin(\theta-\alpha) + \frac{1}{2}\sin\theta \leq \frac{\sqrt{3}}{2}\cos\theta \Leftrightarrow$

$\Leftrightarrow \sin(\theta-\alpha) \leq \sin(\theta-\frac{\pi}{6}) \Leftrightarrow$

$\Leftrightarrow \sin(\theta-\alpha) + \sin(\frac{\pi}{6}-\theta) = 2\sin(\theta-\frac{\pi}{6})\cos(\frac{\pi}{6}-\frac{\alpha}{2})$

oraz

$0 \leq \sin(\frac{\pi}{6}-\theta) - \sin(\theta-\frac{\pi}{6}) = 2\cos(\frac{\pi}{6}-\frac{\alpha}{2})\sin(\frac{\pi}{6}-\frac{\alpha}{2}-\theta)$

$\Leftrightarrow 0 \leq \frac{\alpha}{2} \leq \frac{\pi}{6}$, $0 \leq \theta \leq \frac{\pi}{3} \Rightarrow$

$\sin(\theta+\frac{\pi}{6}-\frac{\alpha}{2}) \geq 0$ i $\sin(\frac{\pi}{6}-\frac{\alpha}{2}-\theta) \geq 0 \Leftrightarrow$

$(0 \leq \theta \leq \frac{\pi}{6} \wedge \theta+\frac{\pi}{6}-\frac{\alpha}{2} \geq 0) \vee (0 \leq \frac{\alpha}{2} \leq \frac{\pi}{6} \wedge 0 \leq \theta \leq \frac{\pi}{6}-\frac{\alpha}{2})$

$\Leftrightarrow (0 \leq \theta \leq \frac{\pi}{6} \wedge \alpha \leq 2(\theta+\frac{\pi}{6})) \vee (0 \leq \alpha \leq 2(\theta-\frac{\pi}{6}))$

Jeżeli więc $\frac{\pi}{6} \leq \theta \leq \frac{\pi}{3}$ to

i wobec (544),

$R(\alpha) \leq \frac{2\cos(2(\theta-\frac{\pi}{6}))}{2\cos\theta}$

$= 2\cos(\theta-\frac{\pi}{3})$

Jeżeli zaś $0 \leq \theta \leq \frac{\pi}{6}$ to $0 \leq \alpha \leq 2(\theta+\frac{\pi}{6})$:

i wobec (544), $R(\alpha) \leq 3/(2\cos\theta)$.

Reasumując, jeżeli

$z_0'' \in \Pi_0$, $z_1'' \in \operatorname{conv}\{e_1, e_2\}$ i $z_2'' = e_0$, to

wobec (542), $z'' = R e^{i\theta}$, gdzie

(545) $R = \begin{cases} \frac{2}{3}\cos(\theta-\frac{\pi}{3}), & \text{gdzie } \frac{\pi}{6} \leq \theta \leq \frac{\pi}{3} \\ \frac{1}{2\cos\theta}, & \text{gdzie } 0 \leq \theta < \frac{\pi}{6} \end{cases}$

Modyfikując ten przypadek przez

zastąpienie warunków $z_0'' \in \Pi_0$ i $z_2'' = e_0$

warunkiem $z_0'' = e_0$ i $z_2'' \in \Pi_2$ dochodzimy

podobnie w (544) dla $\alpha \in [-\frac{2\pi}{3}; 0]$

oraz stwierdzając $\sin(\frac{\pi}{6}+\frac{\alpha}{2}-\theta) \geq 0$,



Compiled by: Jerry Barycki,
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