№1.

$\theta \varepsilon = \bar{v}$

$\Lambda_1 = \cos\frac{\alpha}{2} + \bar{v}\sin\frac{\alpha}{2}$

$\Lambda_2 = \cos\frac{\pi}{4} + i_1\sin\frac{\pi}{4} = \frac{1}{\sqrt{2}}(1+i_1)$

$\Lambda_3 = \cos\frac{\pi}{4} + i_2\sin\frac{\pi}{4} = \frac{1}{\sqrt{2}}(1+i_2)$

$\underline{\Lambda_3 \circ \Lambda_2 \circ \Lambda_1 = 1}$

$(1+i_2)\circ(1+i_1)\circ\left(\cos\frac{\alpha}{2} + \bar{v}\sin\frac{\alpha}{2}\right) = 2$

$\left(1 + \underbrace{i_1 + i_2 - i_3}_{\bar{\lambda}}\right)\circ\left(\cos\frac{\alpha}{2} + \bar{v}\sin\frac{\alpha}{2}\right) =$

$= \cos\frac{\alpha}{2} + \bar{v}\sin\frac{\alpha}{2} + \bar{\lambda}\cos\frac{\alpha}{2} +$

$+ \sin\frac{\alpha}{2}[\bar{\lambda},\bar{v}] - \sin\frac{\alpha}{2}(\bar{\lambda},\bar{v})$

$$= \cos\frac{\alpha}{2} - \sin\frac{\alpha}{2}(\bar{\lambda},\bar{v}] +$$

$$+ \bar{v}\sin\frac{\alpha}{2} + \bar{\lambda}\cos\frac{\alpha}{2} + \sin\frac{\alpha}{2}[\bar{\lambda},\bar{v}]$$

$$\cos\frac{\alpha}{2} - \sin\frac{\alpha}{2}|(\bar{\lambda},\bar{v}| = 2$$

$$\downarrow \qquad |C| \le \sqrt{3}$$

$$\le \sqrt{1+C^2} = 2$$

$$\Leftrightarrow \begin{cases} |(\bar{\lambda},\bar{v}| = \pm\sqrt{3} \\ \alpha = \pm\frac{2\pi}{3} \end{cases}$$

$$\text{Oppure: } \begin{cases} \vec{v} = (i_1 + i_2 - i_3)\frac{1}{\sqrt{3}} \\ \alpha = -\frac{2\pi}{3} \end{cases}$$

$$\text{ossia}$$

$$\begin{cases} \vec{v} = (i_1 + i_2 - i_3)\frac{-1}{\sqrt{3}} \\ \alpha = \frac{2\pi}{3} \end{cases}$$