

3.91  
S

(1)  $\sin \frac{\beta+\gamma}{2} \cos \frac{\alpha}{2} = \cos \frac{\alpha-\beta}{2} \cdot \sin \frac{\alpha}{2}$

$\gamma = 180 - \alpha - \beta$

$\sin \frac{\beta+180-\alpha-\beta}{2} \cdot \cos \left( \frac{180-\alpha-\beta}{2} \right) = \cos \frac{\alpha-\beta}{2} \cdot \sin \frac{\alpha}{2}$

$\sin \left( 90 - \frac{\alpha}{2} \right) \cdot \cos \left( 90 - \frac{\alpha+\beta}{2} \right) = \cos \frac{\alpha-\beta}{2} \cdot \sin \frac{\alpha}{2}$

$\cos \frac{\alpha}{2} \cdot \sin \frac{\alpha+\beta}{2} = \cos \frac{\alpha-\beta}{2} \cdot \sin \frac{\alpha}{2} \quad / : \cos \frac{\alpha}{2} \neq 0$

$\cos \frac{\alpha}{2} \left( \sin \frac{\alpha}{2} \cos \frac{\beta}{2} + \cos \frac{\alpha}{2} \sin \frac{\beta}{2} \right) = \left( \cos \frac{\alpha}{2} \cos \frac{\beta}{2} + \sin \frac{\alpha}{2} \sin \frac{\beta}{2} \right) \cdot \sin \frac{\alpha}{2}$

$\cos \frac{\alpha}{2} \cos \frac{\beta}{2} \sin \frac{\alpha}{2} + \cos^2 \frac{\alpha}{2} \sin \frac{\beta}{2} = \cos^2 \frac{\alpha}{2} \cos \frac{\beta}{2} \sin \frac{\alpha}{2} + \sin^2 \frac{\alpha}{2} \sin \frac{\beta}{2}$

$\Rightarrow \text{pfl } \text{pfl } \sin \frac{\beta}{2} \neq 0 \quad \text{erf.}$

$\cos^2 \frac{\alpha}{2} = \sin^2 \frac{\alpha}{2}$

$\Rightarrow \text{pfl } \text{pfl } \text{erf.} \quad \cos^2 \frac{\alpha}{2} \neq 0$

$1 = \tan^2 \frac{\alpha}{2}$

$\tan \frac{\alpha}{2} = 1$

$\frac{\alpha}{2} = \frac{\pi}{4}$

$\alpha = \frac{\pi}{2}$

$\tan \frac{\alpha}{2} = -1$

erf. erf.