

2.78
P6

$$\sin \alpha + \sin \beta + \sin \gamma = 4 \cos \frac{\alpha}{2} \cos \frac{\beta}{2} \cos \frac{\gamma}{2}$$

$$\gamma = 180 - \alpha - \beta \quad \rightarrow \quad \cos \frac{\gamma}{2} =$$

$$\sin \alpha + \sin \beta + \sin(180 - \alpha - \beta) =$$

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

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

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

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

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

$$2 \sin(\frac{180 - \gamma}{2}) 2 \cos \frac{\alpha}{2} \cos \frac{\beta}{2} =$$

$$4 \sin(90 - \frac{\gamma}{2}) \cos \frac{\alpha}{2} \cos \frac{\beta}{2} =$$

$$4 \cos \frac{\gamma}{2} \cos \frac{\alpha}{2} \cos \frac{\beta}{2} = \leftarrow$$