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$$\begin{aligned} \cos(\alpha - \beta) \cdot \cos(\alpha + \beta) + \cos^2 \gamma &= 0 \\ \cos(\alpha - \beta) \cdot \cos(\alpha + \beta) + \cos^2(180 - (\alpha + \beta)) &= 0 \\ \cos(\alpha - \beta) \cdot \cos(\alpha + \beta) + [-\cos(\alpha + \beta)]^2 &= 0 \\ \cos(\alpha - \beta) \cdot \cos(\alpha + \beta) + \cos^2(\alpha + \beta) &= 0 \\ \cos(\alpha + \beta) [\cos(\alpha - \beta) + \cos(\alpha + \beta)] &= 0 \end{aligned}$$

$$\gamma = 180 - \alpha - \beta \quad (1)$$

$$\cos(\alpha - \beta) = -\cos(\alpha + \beta) = \cos(\pi - (\alpha + \beta))$$

$$\begin{aligned} \cos(\alpha + \beta) &= 0 \\ \alpha + \beta &= 90^\circ \\ \boxed{\gamma = 90^\circ} \end{aligned}$$

$$\begin{aligned} \alpha - \beta &= \pi - \alpha + \beta \\ \boxed{\alpha = 90^\circ} \end{aligned}$$

$$\begin{aligned} \alpha - \beta &= -(\pi - \alpha - \beta) \\ \boxed{\beta = 90^\circ} \end{aligned}$$