

2.54
r7

$$\frac{a^2 - b^2}{c^2} = \frac{\sin(\alpha - \beta)}{\sin \gamma}$$

$$\begin{aligned} \frac{(2R \sin \alpha)^2 - (2R \sin \beta)^2}{(2R \sin \gamma)^2} &= \frac{\sin^2 \alpha - \sin^2 \beta}{\sin^2 \gamma} = \frac{(\sin \alpha - \sin \beta)(\sin \alpha + \sin \beta)}{\sin^2 \gamma} = \\ &= \frac{2 \sin \frac{\alpha + \beta}{2} \cos \frac{\alpha - \beta}{2} \cdot 2 \sin \frac{\alpha + \beta}{2} \cos \frac{\alpha - \beta}{2}}{\sin^2 \gamma} = \frac{\sin(\alpha - \beta) \sin(\alpha + \beta)}{\sin^2 \gamma} = \frac{\sin(\alpha - \beta) \sin \gamma}{\sin^2 \gamma} = 1 \end{aligned}$$