

13] This triangle is of the form SSA. It is ambiguous.

$$\frac{\sin \beta}{b} = \frac{\sin \alpha}{a} \Rightarrow \sin \beta = \frac{b \sin \alpha}{a} = \frac{7 \sin 46^\circ}{6} \Rightarrow \beta_R = \sin^{-1}\left(\frac{7 \sin 46^\circ}{6}\right) \approx 57.1^\circ$$

Thus, $\beta \approx 57.1^\circ$ or $\beta \approx 180^\circ - 57.1^\circ = 122.9^\circ$.

Solution 1: Let $\beta \approx 57.1^\circ$. Then $\gamma \approx 180^\circ - 46^\circ - 57.1^\circ \approx 76.9^\circ$.

$$\frac{c}{\sin \gamma} = \frac{a}{\sin \alpha} \Rightarrow c = \frac{a \sin \gamma}{\sin \alpha} = \frac{6 \sin 76.9^\circ}{\sin 46^\circ} \approx 8.12$$

$$\beta \approx 57.1^\circ, \gamma \approx 76.9^\circ, c \approx 8.12$$

Solution 2: Let $\beta \approx 122.9^\circ$. Then $\gamma \approx 180^\circ - 46^\circ - 122.9^\circ \approx 11.1^\circ$.

$$\frac{c}{\sin \gamma} = \frac{a}{\sin \alpha} \Rightarrow c = \frac{a \sin \gamma}{\sin \alpha} = \frac{6 \sin 11.1^\circ}{\sin 46^\circ} \approx 1.61$$

$$\beta \approx 122.9^\circ, \gamma \approx 11.1^\circ, c \approx 1.61$$