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Sine and Cosine Rules | Past Paper Question | C2 OCR Jan 2013 Q1

$\alpha = 180 - (63 + \theta)$
 $= 77.473\dots^\circ$

The diagram shows triangle ABC , with $AC = 14$ cm, $BC = 10$ cm and angle $ABC = 63^\circ$.

(i) Find angle CAB . [2] (ii) Find the length of AB . [2]

(i) $\frac{\sin \theta}{10} = \frac{\sin 63^\circ}{14}$
 $\therefore \sin \theta = \frac{10 \sin 63^\circ}{14}$
 $= 0.6364\dots$
 $\therefore \theta = \sin^{-1}(0.6364\dots)$
 $= 39.526\dots^\circ$
 $= 39.5^\circ$ (3sf)

(ii) $\frac{AB}{\sin \alpha} = \frac{14}{\sin 63^\circ}$
 $\therefore AB = \frac{14}{\sin 63^\circ} \times \sin(77.473\dots^\circ)$
 $= 15.338\dots$
 $= 15.3$ cm (3sf)

or $AB^2 = 14^2 + 10^2 - 2(14)(10) \cos(77.473\dots^\circ)$
 $= 235.268\dots$
 $\therefore AB = 15.338\dots$
 $= 15.3$ cm (3sf)

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