

| Question Number | Answer | Notes | Marks |
|-----------------|--|--|-------|
| 6 | <p>(a)</p> $7^2 = x^2 + (5x - 6)^2 - 2x(5x - 6)\cos 60$ $49 = x^2 + 25x^2 - 60x + 36 - 5x^2 + 6x$ $21x^2 - 54x - 13 = 0$ $x = \frac{54 \pm \sqrt{54^2 + 4 \times 21 \times 13}}{42}, \quad x = 2.793... \quad x = 2.79$ <p>(b)</p> $\frac{\sin C}{2.79} = \frac{\sin 60}{7}$ $C = 20.2 \quad (\text{using } 2.793 \text{ also gives } 20.2)$ | <p>M1A1</p> <p>A1</p> <p>M1,A1</p> <p>M1A1</p> <p>A1</p> | (8) |

Notes

(a)

M1 for an attempt at substituting x , $(5x - 6)$, 7 and $\cos 60$ into a correct cosine rule. The correct formula must be seen if there are errors in substitution.

A1 a fully correct substitution

A1 for a correct 3TQ

M1 for an attempt to solve their 3TQ (usual rules) This is an independent M mark.

A1 for a correct value of $x = 2.79$ (2.793....)

Some candidates are using graphic calculators to solve this quadratic. M1 A1 for 2.79 only.

$x = 2.793...$ without working gets M1A0, and then penalise further rounding errors in the usual way.

(b)

M1ft for an attempt to use Sine rule correctly (or any other acceptable trigonometry) to find angle BCA. Follow through their numerical value of x .

A1ft for a fully correct Sine rule. Follow through their value of x .

A1 $C = 20.2$ (rounding subject to general principles)