

6 In triangle ABC , $AC = x$ cm, $AB = (x + 3)$ cm and $\angle ABC = 30^\circ$

Given that $\angle ACB = \theta^\circ$ where $0 < \theta < 90$

(a) show that

$$(i) \sin \theta^\circ = \frac{x+3}{2x}$$

$$(ii) \cos \theta^\circ = \frac{\sqrt{3x^2 - 6x - 9}}{2x}$$

(5)

Given that the size of $\angle BAC$:the size of $\angle ABC = 7:2$

(b) find the exact value of x

Give your answer in the form $a + a\sqrt{b}$ where a and b are prime numbers.

(5)

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Question 6 continued

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Question 6 continued

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(Total for Question 6 is 10 marks)

