

6 Given that $\frac{a + \sqrt{5}}{\sqrt{5} - 2} = 11 + 5\sqrt{5}$

- (a) without using a calculator, find the value of a
Show your working clearly.

(2)

Triangle PQR is such that

$$PR = (x + 3) \text{ cm} \quad QR = x \text{ cm} \quad \text{angle } QPR = 30^\circ \quad \text{angle } PQR = 45^\circ$$

- (b) Show that $x = 3 + 3\sqrt{2}$

(3)

Given that $\sin 105^\circ = \frac{\sqrt{6} + \sqrt{2}}{4}$ and that the area of triangle PQR is $A \text{ cm}^2$

- (c) find the exact value of A in the form $\frac{9}{8}(p\sqrt{6} + q\sqrt{2} + r\sqrt{3} + s)$
where p, q, r and s are integers.

(3)

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Question 6 continued

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Handwriting practice area with horizontal dotted lines.



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Question 6 continued

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(Total for Question 6 is 8 marks)