

8

$$f'(x) = 18x^2 - 2x + 13$$

Given that $(2x - 1)$ is a factor of $f(x)$

show that the curve with equation $y = f(x)$ has only one intersection with the x -axis.

(9)

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Question 8 continued

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(Total for Question 8 is 9 marks)

P 7 2 8 6 4 A 0 2 1 3 2

9 (a) Using the formulae on page 2, show that

$$(i) \cos^2 A = \frac{\cos 2A + 1}{2}$$

$$(ii) \sin^2 A = \frac{1 - \cos 2A}{2}$$

(4)

(b) Show that

$$(2 \sin x - \cos x)(\sin x - 3 \cos x) = \frac{1}{2}(\cos 2x - 7 \sin 2x + 5)$$

(5)

$$y = (2 \sin x - \cos x)(\sin x - 3 \cos x)$$

(c) Solve, for $0^\circ \leq x \leq 180^\circ$ the equation, $\frac{dy}{dx} = 0$

Give your answers to the nearest whole number.

(4)

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Question 9 continued

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Ruled area for writing the answer to Question 9 continued.



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Question 9 continued

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Question 9 continued

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(Total for Question 9 is 13 marks)

P 7 2 8 6 4 A 0 2 5 3 2