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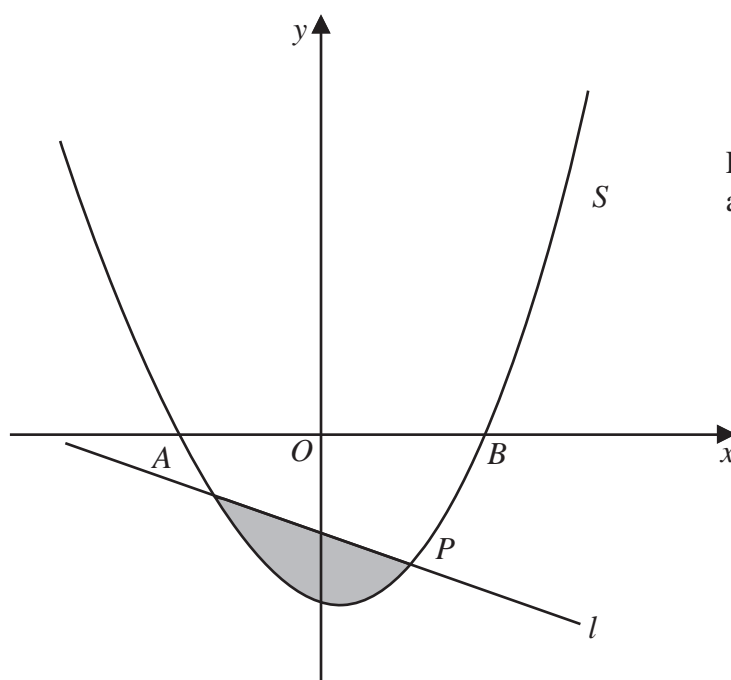


Figure 1

Figure 1 shows part of the curve S with equation $y = px^2 + qx + r$ where p , q and r are constants.

The points A , B and P with coordinates $(-2, 0)$, $(6, 0)$ and $(4, -6)$ respectively lie on S

- (a) Show that an equation of S is $y = \frac{x^2}{2} - 2x - 6$ (3)

The line l is the normal to S at the point P

- (b) Show that an equation of l is $2y + x + 8 = 0$ (5)

The finite region shown shaded in Figure 1 is bounded by S and l

- (c) Use algebraic integration to find the exact area of the shaded region. (7)

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Question 5 continued

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Ruled area for writing the answer to Question 5 continued.



P 7 3 5 8 6 A 0 1 3 3 2

Question 5 continued

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Question 5 continued

Handwriting practice area with horizontal dotted lines.

(Total for Question 5 is 15 marks)



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