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3. On separate diagrams, sketch the graphs of

(a) $y = (x + 3)^2$,

(3)

(b) $y = (x + 3)^2 + k$, where k is a positive constant.

(2)

Show on each sketch the coordinates of each point at which the graph meets the axes.



Question 3 continued

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(Total 5 marks)

Q3



Question 5 continued

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Lined writing area for question 5.

(Total 7 marks)

Q5

Box for answer mark.



Question 6 continued

Lined area for writing the answer to Question 6.

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Q6

(Total 4 marks)



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Question 8 continued

Lined area for writing the answer to Question 8.

(Total 6 marks)

Q8

Small rectangular box for marking the question.



9. Given that $f(x) = (x^2 - 6x)(x - 2) + 3x$,

(a) express $f(x)$ in the form $x(ax^2 + bx + c)$, where a , b and c are constants.

(3)

(b) Hence factorise $f(x)$ completely.

(2)

(c) Sketch the graph of $y = f(x)$, showing the coordinates of each point at which the graph meets the axes.

(3)

A series of horizontal lines for sketching the graph and showing the coordinates of the points where the graph meets the axes.



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Question 9 continued

(Total 8 marks)

Q9



11. The line l_1 passes through the points $P(-1, 2)$ and $Q(11, 8)$.

(a) Find an equation for l_1 in the form $y = mx + c$, where m and c are constants. (4)

The line l_2 passes through the point $R(10, 0)$ and is perpendicular to l_1 . The lines l_1 and l_2 intersect at the point S .

(b) Calculate the coordinates of S . (5)

(c) Show that the length of RS is $3\sqrt{5}$. (2)

(d) Hence, or otherwise, find the exact area of triangle PQR . (4)



Question 11 continued

Lined area for writing the answer to Question 11.

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Q11

(Total 15 marks)

TOTAL FOR PAPER: 75 MARKS

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