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**(Total 8 marks)**

- (4)

6

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**(Total 6 marks)**

6.

Figure 1

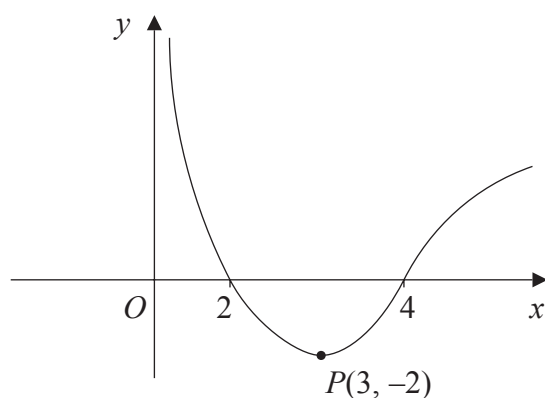


Figure 1 shows a sketch of the curve with equation  $y = f(x)$ . The curve crosses the  $x$ -axis at the points  $(2, 0)$  and  $(4, 0)$ . The minimum point on the curve is  $P(3, -2)$ .

In separate diagrams sketch the curve with equation

(a)  $y = -f(x)$ , (3)

(b)  $y = f(2x)$ . (3)

On each diagram, give the coordinates of the points at which the curve crosses the  $x$ -axis, and the coordinates of the image of  $P$  under the given transformation.

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**Question 6 continued**

**Q6**

**(Total 6 marks)**

(b) Find an equation of the tangent to  $C$  at  $P$ . (3)

(c) Find the value of  $k$ . (2)

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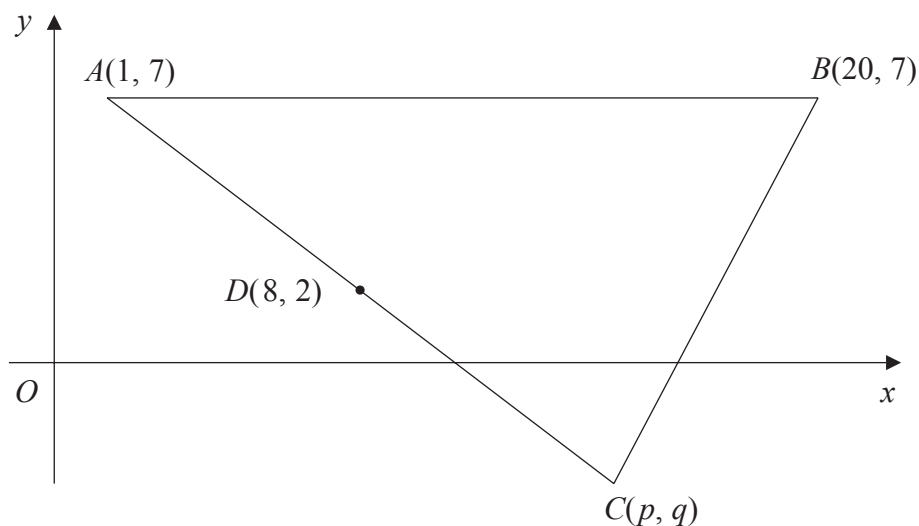
### Question 7 continued

[illegible]

**(Total 10 marks)**

**Q7**

### Figure 2



The points  $A(1, 7)$ ,  $B(20, 7)$  and  $C(p, q)$  form the vertices of a triangle  $ABC$ , as shown in Figure 2. The point  $D(8, 2)$  is the mid-point of  $AC$ .

- (a) Find the value of  $p$  and the value of  $q$ .

(2)

The line  $l$ , which passes through  $D$  and is perpendicular to  $AC$ , intersects  $AB$  at  $E$ .

- (b) Find an equation for  $l$ , in the form  $ax + by + c = 0$ , where  $a$ ,  $b$  and  $c$  are integers.

(5)

- (c) Find the exact  $x$ -coordinate of  $E$ .

(2)

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**Question 8 continued**

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Q8

**(Total 9 marks)**





**Question 9 continued**

[illegible]

**(Total 11 marks)**

**Q9**



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**Question 10 continued**

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**Q10**

**(Total 12 marks)**

**TOTAL FOR PAPER: 75 MARKS**

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