5.

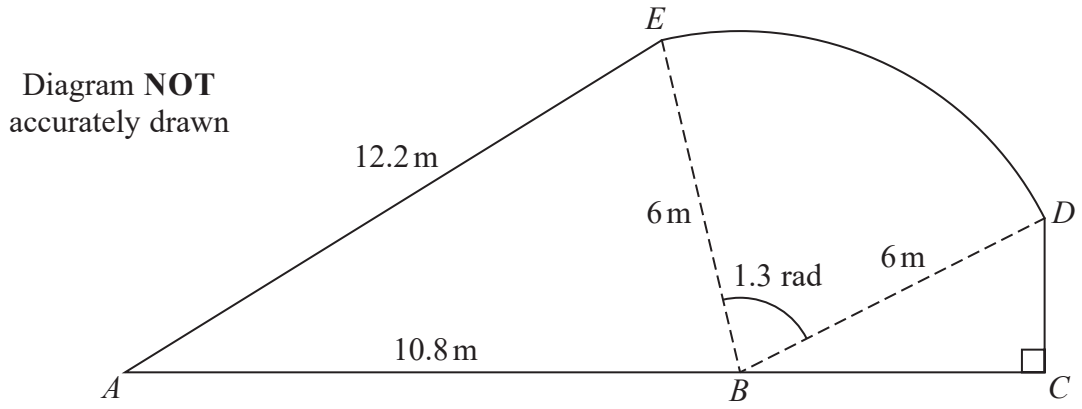

Figure 2

Figure 2 shows the plan view of a garden.

The shape of the garden *ABCDEA* consists of a triangle *ABE* and a right-angled triangle *BCD* joined to a sector *BDE* of a circle with radius 6 m and centre *B*.

The points *A*, *B* and *C* lie on a straight line with $AB = 10.8\,\text{m}$

Angle $BCD = \frac{\pi}{2}$ radians, angle $EBD = 1.3$ radians and $AE = 12.2\,\text{m}$

(a) Find the area of the sector *BDE*, giving your answer in m^2

(2)

(b) Find the size of angle *ABE*, giving your answer in radians to 2 decimal places.

(2)

(c) Find the area of the garden, giving your answer in m^2 to 3 significant figures.

(3)

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Question 5 continued

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Question 5 continued

(Total for Question 5 is 7 marks)

6.

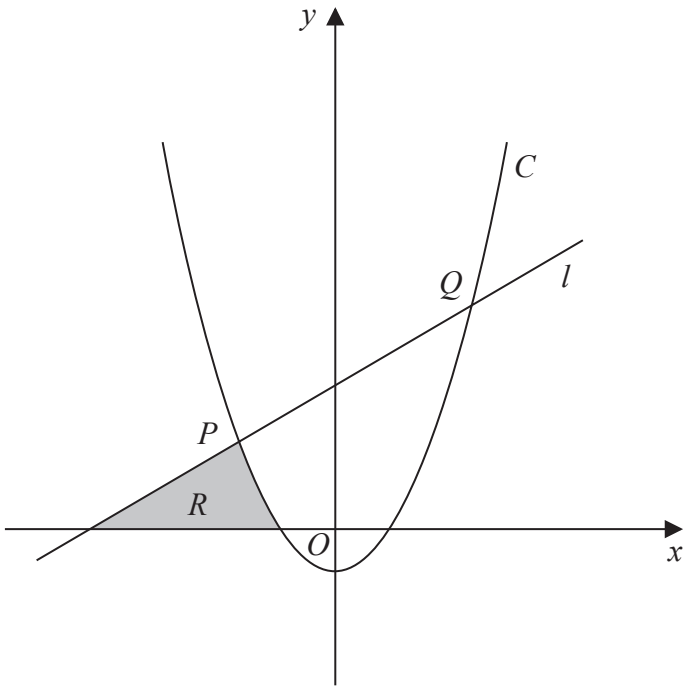

Figure 3

In this question you must show all stages of your working.

Solutions relying on calculator technology are not acceptable.

Figure 3 shows

- the line l with equation $y - 5x = 75$
- the curve C with equation $y = 2x^2 + x - 21$

The line l intersects the curve C at the points P and Q, as shown in Figure 3.

(a) Find, using algebra, the coordinates of P and the coordinates of Q.

(4)

The region R, shown shaded in Figure 3, is bounded by C, l and the x-axis.

(b) Use inequalities to define the region R.

(3)

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