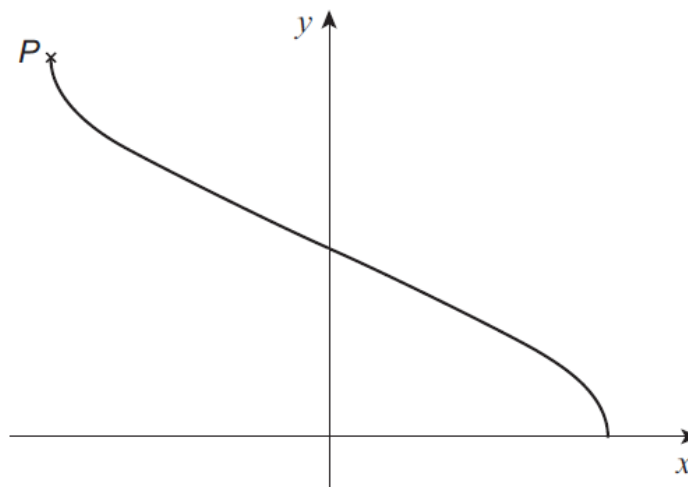**AQA – Trigonometry – A2 Mathematics P3**

1.   June/2021/Paper_7357/3/No.1

The graph of $y = \arccos x$ is shown.

State the coordinates of the end point *P*.

Circle your answer.

[1 mark]

$$(-\pi, 1) \qquad (-1, \pi) \qquad \left(-\frac{\pi}{2}, 1\right) \qquad \left(-1, \frac{\pi}{2}\right)$$

2. June/2021/Paper_7357/3/No.5

A gardener is creating flowerbeds in the shape of sectors of circles.

The gardener uses an edging strip around the perimeter of each of the flowerbeds.

The cost of the edging strip is £1.80 per metre and can be purchased for any length.

One of the flowerbeds has a radius of 5 metres and an angle at the centre of 0.7 radians as shown in the diagram below.
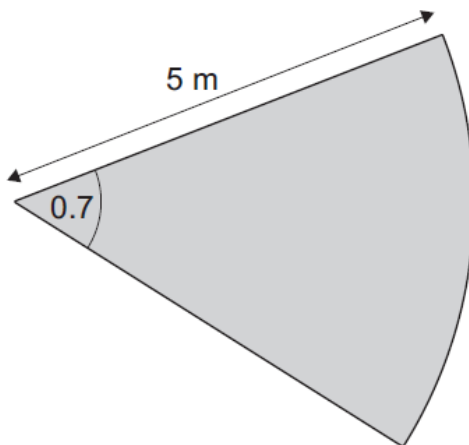
(a) (i)   Find the area of this flowerbed.

[2 marks]

(a) (ii)   Find the cost of the edging strip required for this flowerbed.

[3 marks]

(b) A flowerbed is to be made with an area of $20\,\text{m}^2$

(b) (i) Show that the cost, $£C$, of the edging strip required for this flowerbed is given by

$$C = \frac{18}{5}\left(\frac{20}{r}+r\right)$$

where r is the radius measured in metres.

[3 marks]

(b) (ii) Hence, show that the minimum cost of the edging strip for this flowerbed occurs when $r \approx 4.5$

Fully justify your answer.

[5 marks]

3