AQA – Polar coordinates – A2 Further Mathematics P2

1. June/2021/Paper_7367/2/No.9

(a) The line L has polar equation

$$r = \frac{7}{4}\sec\theta \qquad \left(-\frac{\pi}{2} < \theta < \frac{\pi}{2}\right)$$

Show that L is perpendicular to the initial line.

[2 marks]

(b) The curve C has polar equation

$$r = 3 + \cos\theta \qquad (-\pi < \theta \leq \pi)$$

Find the polar coordinates of the points of intersection of L and C

Fully justify your answer.

[5 marks]

(c) The region R is the set of points such that

$$r > \frac{7}{4}\sec\theta$$

and

$$r < 3 + \cos\theta$$

Find the exact area of R

[7 marks]