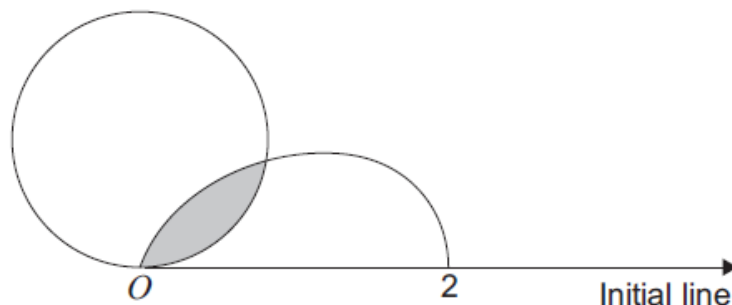


**AQA – Polar coordinates – A2 Further Mathematics P2**

1. June/2020/Paper\_2/No.14

The diagram shows the polar curve  $C_1$  with equation  $r = 2 \sin \theta$

The diagram also shows part of the polar curve  $C_2$  with equation  $r = 1 + \cos 2\theta$



(a) On the diagram above, complete the sketch of  $C_2$

[2 marks]

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(b) Show that the area of the region shaded in the diagram is equal to

$$k\pi + m\alpha - \sin 2\alpha + q \sin 4\alpha$$

where  $\alpha = \sin^{-1}\left(\frac{\sqrt{5}-1}{2}\right)$ , and  $k$ ,  $m$  and  $q$  are rational numbers.

[9 marks]

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