

6 The curve C has polar equation $r = \sin 3\theta$, for $0 \leq \theta \leq \frac{1}{3}\pi$.

(a) Sketch C and state the equation of the line of symmetry. [3]

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(b) Find the exact value of the area of the region enclosed by C . [4]

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In parts **(c)** and **(d)** you may use the identity $\sin 3\theta \equiv 3 \sin \theta - 4 \sin^3 \theta$.

- (c) Find the maximum distance of a point on C from the initial line. [5]

[illegible]

- (d)** Find a Cartesian equation for C . [3]

[illegible]