



STEP III, 1998, Q4

- 4 Show that the equation (in plane polar coordinates) $r = \cos \theta$, for $-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$, represents a circle.

Sketch the curve $r = \cos 2\theta$ for $0 \leq \theta \leq 2\pi$, and describe the curves $r = \cos 2n\theta$, where n is an integer. Show that the area enclosed by such a curve is independent of n .

Sketch also the curve $r = \cos 3\theta$ for $0 \leq \theta \leq 2\pi$.



NextStepMaths.com

To view mark schemes, fully worked solutions and examiner's comments, and for more details about tutoring and other services offered, go to NextStepMaths.com