



QUESTION WORKBOOK

Further loci and regions in the Argand diagram

Further Pure 2 · Year FM

6 questions · 25 marks

NAVY SCREEN EDITION

SECTION A · Warm-up

- A1** Write down the centre and radius of the circle $|z + 2 - i| = 3$, and find the cartesian equation of the locus $|z - 4| = |z - 2i|$. [3]

- A2** Sketch and describe the locus $\arg(z - 2) = \pi/4$. [3]

SECTION B · Standard

- B1** Describe the locus given by $\arg((z - 1)/(z + 1)) = \pi/2$, justifying the shape. [4]

B2 Shade the region satisfying both $|z| \leq 4$ and $|z - 3| \geq |z + 3|$, and find its area. [4]

B3 Find the cartesian equation of the locus $|z - 3| = 2|z + 3|$ and describe the locus geometrically. [5]

SECTION C · Stretch

C1 The point z moves on the circle $|z - 4| = 2$. Find the greatest and least values of $|z|$, and the greatest and least values of $\arg z$, giving exact answers. [6]