



QUESTION WORKBOOK

Modulus, argument and loci

Complex numbers · Year FM

7 questions · 26 marks

NAVY SCREEN EDITION

SECTION A · Warm-up

A1 Find the modulus and argument of $z = -1 + \sqrt{3}i$. [3]

A2 Write the number with modulus 2 and argument $\pi/3$ in the form $x + yi$, exactly. [2]

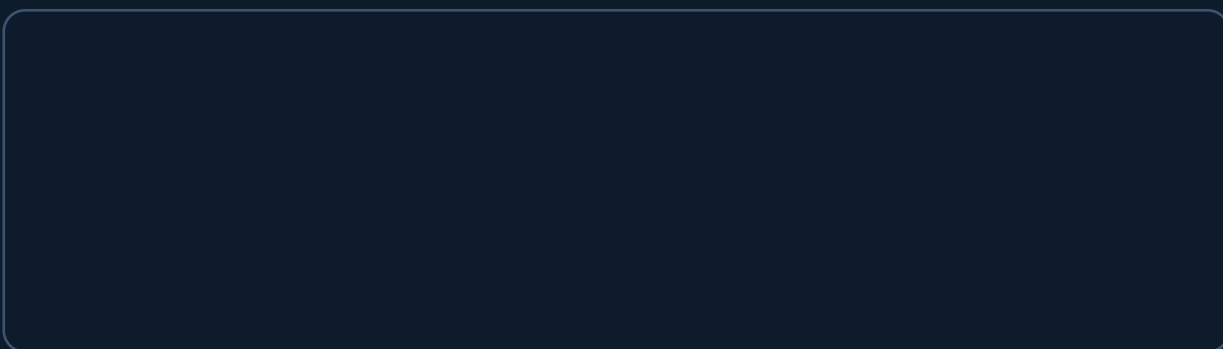
SECTION B · Standard

B1 z has modulus 2 and argument $\pi/6$; w has modulus 3 and argument $\pi/4$. Find the modulus and argument of zw and of z/w . [4]

B2 Sketch the locus $|z - 3 - 4i| = 2$, and find the greatest and least values of $|z|$ on it. [4]

B3 Describe the locus $|z - 2| = |z + 2|$ and justify the description. [3]

B4 On one Argand diagram, shade the region satisfying both $|z| \leq 3$ and $0 \leq \arg z \leq \pi/2$, and find its area. [4]



SECTION C · Stretch

C1 The locus of z satisfies $|z - 2| = 2|z + 1|$. Show that it is a circle, and find its centre and radius. [6]

