MCINTYRE MATHS · MATHEMATICS EXTENSION 2

Practice worksheet

Lesson 9 · Lines and circles in the Argand diagram

Name: _____ Date: _____

Circles and regions

1. Sketch each locus or region and write its Cartesian equation.

(a) $|z-2+i|=3$ (b) $|z+1|\leq 1$

(c) $|z-2i|>2$

Perpendicular bisectors

2. Find the Cartesian equation of $|z-3|=|z+i|$.

3. The circle $|z-1-i|=k$ touches the locus $|z-1|=|z-3|$. Find k and the point of contact.

Change of variable

4. If $|z-1|=1$ and $w=\dfrac{1}{z}$, find the locus of w.

5. Find the locus of z if $\dfrac{z-1}{z+1}$ is purely imaginary.

6. If $w=2z+1$ and $|z|=3$, find the locus of w.

HSC-style

7. (a) On one Argand diagram sketch $|z-(1+i)|=2$ and $|z-2|=|z+2i|$. (b) Find the complex numbers that satisfy both equations.