

Complex Numbers and Analytic Geometry

Analytic geometry is the use of equations to describe geometric figures.

1. How can you represent a circle using complex numbers?
2. How can you represent a line using complex numbers? Can you do it without making reference to the real and imaginary parts of the number?
3. Consider the mapping which sends z to $\frac{1}{z}$.
 - (a) Draw a picture of what this mapping does:
 - (b) Using your answers to the first two questions, see if you can figure out what happens to circles? What happens to lines?