

1. Let D be the relation on \mathbb{R} defined by $x D y$ if $x - y \in \mathbb{Z}$. Prove that D is an equivalence relation. Describe the elements of the equivalence class $23/17$.

2. Prove that

$$\{M_r : r \in \mathbb{R}, r \geq 0\}$$

is a partition of \mathbb{C} , the set of complex numbers, where each

$$M_r = \{z \in \mathbb{C} : \|z\| = r\}.$$

[Notes about complex numbers: A complex number is of the form $z = x + iy$, where x and y are real, and $i = \sqrt{-1}$ is the imaginary unit. The magnitude of a complex number $z = x + iy$ is $\|z\| = \sqrt{x^2 + y^2}$.]