

Complex Analysis Chapter 1 Exercises

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1. Describe geometrically the sets of points z in the complex plane defined by the following relations:
 - (a) $|z - z_1| = |z - z_2|$ where $z_1, z_2 \in \mathbb{C}$.
 - (b) $1/z = \bar{z}$.
 - (c) $\operatorname{Re}(z) = 3$.
All complex numbers of the form $z = 3 + bi$, where $b \in \mathbb{R}$. Geometrically, this is a vertical line at 3.
 - (d) $\operatorname{Re}(z) > c$ where $c \in \mathbb{R}$. All complex numbers of the form $z = c + bi$, where $b \in \mathbb{R}$. Geometrically, everything to the right of the vertical line at c .
 - (e) $\operatorname{Re}(az + b) > 0$ where $a, b \in \mathbb{C}$.
 - (f) $|z| = \operatorname{Re}(z) + 1$.
 - (g) $\operatorname{Im}(z) = c$ with $c \in \mathbb{R}$.