

COMPLEX PLANE

Why

We are regularly thinking of **C** as plane.

Definition

Since $C = \mathbb{R}^2$, we can identify elements of C with points in the plane (as we did in Real Plane). In this case, if $z = x + iy \in C$ (i.e, $z = (x, y) \in \mathbb{R}^2$), we can visualize this identification in the following figure.

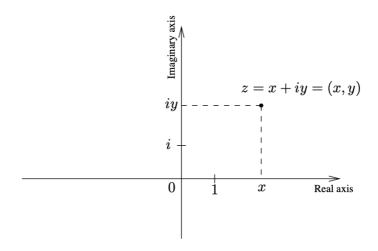


Figure 1: The complex plane

We can identify the origin with the complex number $(0,0) = 0 \in \mathbb{C}$. For this reason we call $0 \in \mathbb{C}$ the *complex origin*. Likewise, the imaginary number $(0,1) = i \in \mathbb{C}$ corresponds to (0,1) Clearly, the horizontal axis corresponds to the purely

real numbers and the vertical axis corresponds to the purely imaginary numbers. For these reasons, we refer to these axes as the *real axis* and *imaginary axis*, respectively.

