

Panel 1

Complex Analysis

HW #3

① We know that $\arg(zw) = \arg(z) + \arg(w)$. Is it true for Arg ?

In other words: is $\text{Arg}(zw) = \text{Arg}(z) + \text{Arg}(w)$ for all $z, w \in \mathbb{C}$?

② Use de Moivre's Formula to derive the following trig identities:

a) $\cos(3\theta) = \cos^3(\theta) - 3\cos\theta \sin^2(\theta)$

b) $\sin(3\theta) = 3\cos^2(\theta)\sin(\theta) - \sin^3(\theta)$

③ Take $z = -1+i$, $w = 2+i$. Show graphically

$|z|$, $\arg(z)$, z^2 , $1/z$, $z \cdot w$, and \bar{w} . Confirm algebraically.

④ Suppose $\omega = e^{i\frac{2\pi}{5}}$. Draw $\omega^0, \omega^1, \omega^2, \omega^3, \omega^4$ and ω^5

continued \Rightarrow