Complex Analysis Homework 1

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1.) Show that:

a) $Re(iz) = -Im(z)$

Proof

Let $z = x + iy \in \mathbb{C}$

$\Rightarrow iz = ix - y$

$\Rightarrow Re(iz) = -y$

On the other hand, $Im(z) = y$

Thus, $Re(iz) = -y = -Im(z)$

$\Rightarrow Re(iz) = -Im(z)$ ∎

b) $Im(iz) = Re(z)$

Proof

Again, let $z = x + iy \in \mathbb{C}$

$\Rightarrow iz = ix - y$

$\Rightarrow Im(iz) = x$

On the other hand, $Re(z) = x$

Thus, $Im(iz) = x = Re(z)$

$\Rightarrow Im(iz) = Re(z)$ ∎