Complex Numbers Q19 – Practice/Y1/M (22/5/21)

How are the complex numbers $cos\theta + isin\theta$ and $sin\theta + icos\theta$ related?

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Solution

$sin\theta + icos\theta = \cos\left(\frac{\pi}{2} - \theta\right) + isin(\frac{\pi}{2} - \theta)$

As both complex numbers have a modulus of 1, $sin\theta + icos\theta$ is the reflection of $cos\theta + isin\theta$ in the line Re = Im (see diagram below).