Answer on Question #58325 – Math – Complex Analysis

Question

Let
w=ρ(cosϕ+isinϕ),
z=r(cosθ+isinθ)
and if n is a positive integer, the nth roots of a complex number are by definition the value of w which satisfies the equation

Solution

The *n*th roots of a complex number $z = r(cos\theta + isin\theta)$ are defined by

$$w = \sqrt[n]{z},$$

where $w = \rho(cos\phi + isin\phi)$, $\rho = \sqrt[n]{r}$, $\phi = \frac{\theta+2\pi k}{n}$, $k = 0, 1, \dots, n-1$.