NOTES OF MATHS CORE-02 (Sem I)

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De Moivre's theorem

Polar representation of Complex Number:-
There are two geometric representation of the Complex Number $z = x+iy$

(a) as the point $P(x,y)$ in the xy-plane and
(b) as the vector $\overrightarrow{OP}$ from the origin to P

In each representation, the x-axis is called the Real axis and y-axis is the Imaginary axis.

Both representation are Argand diagrams for $x+iy$.

In terms of polar Co-ordinate of x and y, we have $x = r\cos\theta$ and $y = r\sin\theta$

$\therefore z = x+iy$
$= r\cos\theta + ir\sin\theta$
$= r(\cos\theta + i\sin\theta)$

Here $r = |z| = |x+iy| = \sqrt{x^2+y^2}$

The polar angle θ is called the Argumen (or amplitude) of z and is written as $\theta = \arg z$

Teacher Signature