Chapter 5

COMPLEX NUMBERS

Note:

x + iy = (x, y) is called rectangular form of the complex number. Henceforth x + iy means (x, y). We denote this by single letter z.

Integral powers of i:

1) $i^2 = i.\ i = \sqrt{-1}\sqrt{-1} = \left(\sqrt{-1}\right)^2 = -1$

2) $i^3 = i^2.\ i = (-1)i = -i$

3) $i^4 = (i^2)^2 = (-1)^2 = 1$

4) $i^5 = i^4.i = 1.\ i = i$ and so on

Then $i^n \ (n \in z)$ always given one of the four values -1, -i, 1, i.

Note:

1) $i^{4n} = 1$

2) $i^{4n+1} = i \quad (n \in z)$

3) $i^{4n+2} = -1$

4) $i^{4n+3} = -i$