PAGE No.
DATE

Eg- square root of $3+4i = ?$

$\sqrt{3+4i} \rightarrow (1)$

square root should be of $\sqrt{(a+ib)^2}$

$= \sqrt{a^2-b^2+2abi} \rightarrow (2)$

Comparing 1 and 2,

$2ab = 4 \qquad a^2-b^2 = 3$

$\Rightarrow ab = 2$

∴ 2 and 1 are the 2 no.s with product = 2 & difference of squares as 3.

$\Rightarrow \sqrt{3+4i} = \sqrt{2^2-i^2+2\cdot2\cdot1\cdot i}$

$= \sqrt{2^2+i^2+4i}$

$= \pm(2+i)$

2) Find value of $\sqrt{i}$

$\sqrt{i} \rightarrow \sqrt{a^2-b^2+2abi}$

$\sqrt{i} = \sqrt{\frac{2i}{2}}$

∴ Finding for $\sqrt{2i}$

$2ab = 2 \Rightarrow ab = 1$ & $a^2-b^2 = 0$

$\Rightarrow a$ and $b = 1$