Tutorial 3.1

1. Discuss following properties for complex numbers (for addition and multiplication both):
   Commutative law; Associative law; Two identities; Two inverses; distributive laws.
2. Express the following in $a + ib$ form.
   i^{275}, $(i-1)^3$, $Re(7+3i) + Im(5-4i)$, $\overline{(1+i\sqrt{3})(i+\sqrt{3})}$
3. Evaluate the following:
   $\overline{(1+i)(2+i)}(3+i)$, $Im[(1+i)^{-2}]$, $Re(e^{z^4})$, $z\bar{z}$, $|(1+i)^{50}|$, $|(z-1)^2|$
4. Give geometrical interpretation of the following:
   Modulus, addition of two complex numbers, $Re(z)$, $Im(z)$, $|z| < 1$, triangle inequality.
5. Write any 10 interior points and 10 exterior points. Also write 10 boundary point for the following region: $|z - i| = 2$. Also, Check the following! which points lie inside the given circle?
   $1/2 + i$, $\sqrt{2} + i(\sqrt{2}+1)$, $2 + 3i$
6. Sketch the following: $|z + 1 - 2i|$, $Re(z+1) = 0$, $|z + 2i| \leq 1$, $Im(z - 2i) > 6$

Assignment Problems

Submit by:10 April 2014

Book: Kreyszig's Advanced Engg Mathematics

Exercise 13.1: Problems - 1 to 20 (All)

Exercise 13.2: Problems - 1 to 18 and 20 to 30

Exercise 13.3: Problems - 1 to 8

Note. Next tutorial sheet will be based on Limits, continuity and Differentiability.