Assignment-3

① Mark by points on the Argand diagram, all the values of $(1+i\sqrt{3})^{1/5}$ and verify that they form a pentagon.

② Find all the values of

(i) $(-1-i)^{1/5}$ and also find the product of all the values.

(ii) $(-1+i\sqrt{3})^{3/2}$

(iii) $(1+i\sqrt{3})^{3/4} + (1-i\sqrt{3})^{3/4}$

③ Find all the values of $(-1)^{1/6}$

④ Solve $x^7 + x^4 + x^3 + 1 = 0$

⑤ Solve $x^8 - x^5 + x^3 - 1 = 0$

⑥ Solve $(x-1)^5 + x^5 = 0$

⑦ Find the roots common to the equations $x^4+1=0$ and $x^6-i=0$.

⑧ Solve $x^{12} - 1 = 0$ and find which of its roots satisfy the equation $x^4 + x^2 + 1 = 0$.

⑨ Prove that nth roots of unity form a geometric progression. Also show that the sum of these n roots is zero and their product is $(-1)^{n-1}$.

G-1	2(iii)	G-7	4
G-2	8	G-8	3
G-3	1	G-9	7
G-4	2(i)	G-10	6
G-5	9	G-11	5
G-6	2(ii)		

Submit by 20-8-2012