MATHEMATICS

Q1. We can write the problem as (x+..)^2 + (y+..)^2 + (z+..)^2 + (+ve no.) =0 , which cannot be satisfied by any real value set of **x,y,z** So its locus is an empty set.

Q2. Just try to equate the bases of both sides which can be done using formulae of logrithm which gives us the answer.

Q3. For any real value of **x,** value of each number in every bracket is positive and we know that sum of positive numbers cannot be zero. So the equation has no real root.

Q4. Let`s say x=k, y=mk and z=nk where k,m,n $\in$ ***R***. And put these value in equation and solve. You will get m=1/2 and n=3/4 and k is any real number. So **x:y:z=4:2:3.**

Q5. Trigonometric form of complex numbers are known as cis complex no. cis θ=cos θ + $i$sin θ.

Q6. Just take a line parallel with its eq. y= λ to visualize the solution . Number of intersection of the line and the given graph gives us the number of solutions. e.g for y= 2, line and the graph have three points of intersection which is equal to the number of solutions.

Q7. To find the shortest distance between two non-intersecting lines with equations x-x1/l1 = y-y1/m1 = z-z1/n1 (=r1 say) and x-x2/l2 = y-y2/m2 = z-z2/n2 (=r2 say), you can get two points on each line. If you say that line joining these points has shortest lenght, then its direction ratio will be perpendicular to both the given lines. So You can find the values of r1 and r2 which gives us both the points. So you can find the shortest distance.

Q9. You should not start solving problems without understanding the question completely which creates problems. First develope a blueprint of the solution if you`ve understood and analyzed the problem. While solving algebra and co-ordinate geo, choosing proper notation matters a lot e.g. (x-1),(x+1) is much better than x,(x+2). You can think useful shortcuts and