1) Define a rotation in $N$ dimensions:
   
   A) Prove that the set of all rotations in $N$ dimensions form a group.
   
   B) Discuss small rotations in dimensions decide the matrix generators in $N$ dimensions — i.e., how many independent generators exist and what commutation relations do they satisfy?

2) Do the same as above for the Lorentz group in 4 dimensions (insinitism).

3) Show how the Lorentz group can be regarded as being composed of two rotation groups and discuss what this is.