1 Chapter 2

1.1 Exercise 2.1

This exercise comes down to verifying that the three conditions are met such that the given collection τ of subsets of X (*open sets*) is indeed a *topology* on X

1.1.1 (a)

τ = { { 1 } , { 1,2 } , { 1,2,3 } , $\emptyset$ } = { U1, U2 , U3 , U4 } and X = { 1,2,3 }

1. (i) X and $\emptyset$ are elements of τ
2. (ii) τ is indeed closed under finite intersections, gives $\emptyset \ \epsilon \ \tau$
3. (iii) τ is indeed closed under arbitrary intersection. U$_{\alpha \epsilon A} U_{\alpha}$ is in τ