MAT 641 Spring 2014 hw 1

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1. Find all the topologies on the set $X = \{0, 1\}$. Which ones are Hausdorff?
2. Verify that the co-finite topology is in fact a topology. When is it metrizable?
3. Show that if X is finite and $\mathcal{T}$ is a metrizable topology on X then $\mathcal{T}$ is the discrete topology.