Homework 7: The Product Topology

*Assignments should be **stapled** and written clearly and legibly. Problem 2 is optional.*

1. §3.2, #3.15, 3.16, 3.19, 3.21. Note the problems 3.15 and 3.19 require proofs.
2. (Challenge) Let X be a topological space. Define the **diagonal** $\Delta = \{(x, x) : x \in X\}$, a subset of $X \times X$. Prove that X is Hausdorff if and only if Δ is closed in $X \times X$.