Solutions - 6.2

(9) (de Morgan, second part) If S is any space and F is a family of sets, show that

$$\left[\bigcap_{A\in F} A\right]^c = \bigcap_{A\in F} A^c$$

(10b) Let A, B be sets in space S. Define $A - B = \{p \in S : p \in A \text{ and } p \text{ not in } B\}$. Show that

$$A - (A - B) = A \cap B$$

(11) In $\mathbb{R}^2$ with the Euclidean metric, find an infinite family of open sets $\{A_n\}$ such that $\bigcap A_n = \overline{B(0,1)}$, the closed ball of radius 1 centered at the origin. (Finding a family is sufficient, you don't need to prove that it works.)