1. 5 points Exercise 2.1
2. 5 points Exercise 2.2 parts a and c
3. 5 points Exercise 2.3
4. 5 points Exercise 2.5
5. 5 points Exercise 2.7
6. 5 points Exercise 2.18

7. 5 points Fix $X : \Omega \to \mathbb{R}$. Let $\mathcal{A}$ be a collection of subsets of $\mathbb{R}$ and let $\mathcal{G}$ be a sigma-algebra of subsets of $\Omega$. Suppose that $X^{-1}(A) \in \mathcal{G}$ for all $A \in \mathcal{A}$. Show that $X^{-1}(A) \in \mathcal{G}$ for all $A \in \sigma(\mathcal{A})$. 