(1) Chapter 2, exercise 2.4.
(2) Chapter 2, exercise 2.6.
(3) Let $G$ be a group.
   (a) Prove that the intersection of any two subgroups of $G$ is again a subgroup.
   (b) Using the example $G = \mathbb{Z}^+$, show that the union of two subgroups of $G$ is not always a subgroup.
(4) Let $G$ be a group. Let $H$ be a nonempty subset of $G$ with the property that for any $a, b \in H$, we also have $a^{-1}b \in H$. Prove that $H$ is a subgroup.
(5) Chapter 2, exercise 3.1.
(6) Chapter 2, exercise 4.1.
(7) Chapter 2, exercise 4.2.