1. The problem Composite is the decision problem that takes as input a positive integer \( n \) and asks if \( n \) is a composite. Show that Composite is in NP.

2. Do you think Composite is NP-complete? Explain your answer.

3. For a problem \( X \), define its complement as the problem

   \[ \overline{X} = \{ x \in \{0,1\}^* | x \notin X \}. \]

   (Thus yes-instances of \( X \) are no-instances of \( \overline{X} \) and no-instances of \( X \) are yes-instances of \( \overline{X} \).) If \( X \in P \), then do you think \( \overline{X} \) is also in \( P \)? Explain your answer.

4. If \( X \in NP \), then do you think \( \overline{X} \) is also in \( NP \)? Explain your answer.

5. Problems 1 and 2 at the end of Chapter 8 (Page 505).