Limitations of Algorithmic power

- Read section 11.1 (pages 386-393)
- What is the goal of a **lower-bound argument**?
- What is a **lower bound** for a problem? When is it said to be **tight**?
- How do we obtain a **trivial lower bound** for a problem?
  - What would be the trivial lower bound for the problem of sorting n numbers?
  - What would be the trivial lower bound for the problem of evaluating a polynomial of degree n?
- What is the main idea behind **information-theoretic lower bounds**?
  - Explain the idea in the context of an algorithm trying to guess a number from 1 to n.
- What is the main idea behind the **adversary method** for lower bounds?
  - Explain the idea in the context of an algorithm trying to guess a number from 1 to n.
  - This method is based around the idea of a *malevolent but honest adversary*. Explain what that means.
- Describe the **problem reduction** approach to establishing lower bounds. What is this idea based on?
- Practice problems: 11.1.3, 11.1.5