

**COS 522 Homework 2: Due Oct. 14 in class**

1. Chapter 5: questions 5, 6, 7.
2. Chapter 6: Questions 3, 4, 10.
3. Chapter 7: question 4.
4. Let us study to what extent Claim 7.3 in Chapter 7 truly needs the assumption that  $\rho$  is efficiently computable. Describe a real number  $\rho$  such that given a random coin that comes up “Heads” with probability  $\rho$ , a Turing machine can decide an undecidable language in polynomial time. (Hint: think of the real number  $\rho$  as an advice string. How can its bits be recovered?)