Problems due in the drop-box by 7PM, Thursday, April 14th
Late assignments will only be accepted up until 5PM on Friday, April 15th

Question 1 (10 pts). *Chapter 6, Exercise 13, on p. 324. [Hint: Reduce to the negative cycle detection problem and use a key fact that relates products to sums:* $\log(xy) = \log x + \log y$, *which holds for any real-valued* x, y, *and for any base of the logarithm (although base 2 is all you'll need here)].*

Question 2 (10 pts). *Chapter 7, Exercise 14, on p. 421.*

Question 3 (10 pts). *Chapter 7, Exercise 16, on pp. 422-23.*

Question 4 (10 pts). *Exercise 5 of Chapter 8, on pp. 506-7.*
To clarify these definitions, if we have $A = \{1, 2, 3, 4, 6, 9\}$, $B_1 = \{1, 2, 6\}$, $B_2 = \{3, 4, 9\}$, *and* $B_3 = \{1, 6\}$, *then* $\{3, 6\}$ *is a hitting set (hits each* B_i*) but* $\{2, 4, 9\}$ *is not, since it misses* B_3. *To prove* HITTING SET *is NP-Complete, you will first need to show that it is in NP, then show a polytime reduction from another NP-Complete problem seen in class to* HITTING SET.

As always, the wording "give an efficient algorithm" and "show how to decide in polynomial time" both imply that you must prove that your algorithm is correct and that you must state a polynomial time bound and demonstrate that your algorithm runs in this bound.