CSE 410/510pm: Probabilistic Methods in AI

Homework #2
Due in class on Wednesday, October 13, 2010

Guidelines: You can brainstorm with others, but please solve the problems and write up the answers by yourself. You may use textbooks (Koller & Friedman, Russell & Norvig, etc.), your notes, and lecture slides from Winter quarter. Please do NOT use any other resources (e.g., online problem solutions) without asking.

Please show enough of your work to make your approach clear.

1. [20 pts] K&F 2.6
   (Hint: $P(X, Y) = \sum_z P(X, Y, z)$. If this equality seems unintuitive, imagine the full joint distribution and figure out what numbers you would sum to construct $P(X, Y)$ given $P(X, Y, Z)$.)

2. [30 pts] K&F 3.2

3. [25 pts] K&F 3.6

4. [25 pts, Grads Only] K&F 3.3
   (Undergrads may attempt this problem for 5 points extra credit.)

5. [5 pts] (Extra Credit) K&F 2.7

6. [5 pts] (Extra Credit) K&F 3.1