Homework 5

The following problems are from your textbook. The page number refers to the page in the 4th edition. Please label the questions by page number and question number. For questions that are not from the textbook use the label "Worksheet" and then the question number.

- p329 # 12
- p352 # 11
- p371 # 1
- p372 # 5
- p391 # 2
- p392 # 4
- p383 # 3 (In the exercises section... I know, the answers are at the back, so you better get it right :P)
- p383 # 4 (Also in the exercises)
- p393 # 13

Back to the Sawks! As usual in the following we assume that each baseball games is independent of all others. Suppose the Red Sox are 6-10 (i.e. had 6 wins and 10 losses) and the Yankees are 8-8.

(1) Give the following confidence intervals for the Red Sox' true winning percentage:
   (a) 95%
   (b) 99.7%
   (c) 50%

(2) If they keep winning at the same rate, how many games would the two teams have to play for you to be 95% sure that the Yankees' true winning percentage is higher than the Red Sox' true winning percentage?

(3) How many games would the Red Sox have to play with a 37.5 winning percent for 50% to be outside the 95% confidence interval for their true winnning percentage?

(4) My friend offers me $1000 if the Red Sox finish the season with over 90 wins, and I just pay him $2 if they don't. Should I take his offer? Why or why not?

(5) Now suppose that after 80 games the Red Sox are 30-50. Give a 99.99% confidence interval for their true winning percentage.

(6) Suppose that after 80 games the Yankees are 46-34. How confident (in this case skeptical?) would you be that the Yankees true winning percentage is less than 50% and the Red Sox is greater than 50%?