Midterm Exam

1. Recall from an earlier computer exercise that we had found the exact CI coverage from inverting a Wald test of the two-sided binomial hypothesis ($n = 25$, $\pi = .5$, $\alpha = .05$). Confirm the same result for $\pi = .6$ for the Wald test, score test, LR test, and Clopper-Pearson method; use Agresti's graph on p. 19 to verify your results, when possible. Compute the exact CI coverage using the mid-P-value; compare this answer to the Clopper-Pearson coverage. Which method provided the best exact coverage?

2. Consider the following 2X2 table with fixed row and column marginals:

5	5	10
2	8	10
7	13	20

   (a) What is the range of n_{11}?

   (b) Consider the exact test of $H_o : \theta = 3$ vs. $H_A : \theta > 3$ ($\alpha = .05$). Find the rejection region and compute a p-value for this test.

3. Conduct a goodness-of-fit test of the table below for each of the models $H_o : \pi_{ij} = ij\kappa$ and $H_o : \pi_{ij} = (i + j)\kappa$. Assume a multinomial sampling model. Which model seems to fit the data better?

	1	2	3
1	6	12	19
2	7	19	26
3	20	22	40