Homework 6 solutions - 50 total points

STAT 201-502

6.13 (a) $n = 25$, $\bar{X} = 80$ and $\sigma = 35$
We need to make a 95% CI for μ(=mean time spent studying statistics by all the students in this class) using $\bar{X} \pm Z^* \frac{\sigma}{\sqrt{n}}$.
For C=.95 Z^*=1.96 so CI=$80 \pm (1.96)\frac{35}{\sqrt{25}}$=(66.28, 93.72)
(b) No, this is a range of values for the mean study times, not for individual study times. We are 95% confident that the true mean study time for the whole class will fall in this range. If we take 100 samples of size 25 and calculate a 95% confidence interval for each then 95 of these CI's will contain the true mean while 5 will not contain the true mean.

6.31 (a)Different samples will yeild different percentages of people whose favorite sport is football. One sample cannot perfectly represent the population.
(b) 95% of samples of size 1011 people will give us an accurate estimate of the true proportion of all Americans whose favorite sport is football (within some margin of error).
(c) $37 \pm 3 = (34, 40)$
(d) The time the poll was taken will definately affect the results. The results during football season will be much higher than if the poll was taken not during football season.

6.35 (a) If μ is the population mean proportion of food expenditures in restaurants then we test $H_o : \mu = 0.3$ vs. $H_a : \mu \neq 0.3$
(b) If μ is the time it takes for mice to get through this one particular maze then we test $H_o : \mu = 20$ seconds vs. $H_a : \mu < 20$ seconds because we want to see if rap music makes them decrese the time
(c) If μ is the mean DXA reading for the phantom then we test $H_o : \mu = 1.3g/cm^2$ vs. $H_a : \mu \neq 1.3g/cm^2$

6.38