# Applied and Mathematical Statistics
## Homework Three



Figure 1: Giraffes. Figure source `http://www.giraffes.org/giraffelink.html`.

Please do these problems before class on Thursday. These are not meant to be long calculations. Use R for all your work.

1. The height of adult giraffes are distributed according to a Normal distribution with mean 5 and standard deviation 0.4.

   (a) What fraction of the giraffes are less than 4.8 meters tall?

   (b) What is the probability that a giraffe has as height of more than 6 meters?

   (c) Ninety-five percent of the giraffes fall within what height range?

   (d) Find a height $h$ such that 75% of the giraffes are $h$ or shorter.

2. You measure the heights of 90 unicorns. The average of your sample is 1.1 and the variance of your sample is 0.2. Determine a 95% confidence interval for your estimate of the mean height of the unicorn population.

3. Get the Eastport precipitation data from the course homepage. Determine the mean of this data and the standard error of the mean. Use this to form a 95% confidence interval for the mean monthly precipitation in Eastport. Test the hypothesis that the mean monthly precipitation in Eastport is 4.0. Do these directly by using R and the central limit theorem and also by using the `t.test` command in R.