**Instructions**: Answer each question as thoroughly as possible. Round answers to 4 decimal places as needed. Exact answers are best when possible. Be sure to answer all parts of each question.

1. A weather researcher measured the temperature everyday in the month of June one year and found a mean high temperature of 81.6 in a particular city with a standard deviation of 5.1 degrees. Construct a 99% confidence interval for the mean high temperature in June in the same city for any year. (June has 30 days.)

2. A poll is conducted and found that among 350 survey takers, 10% of respondents did not identify as right-handed. Construct a 90% confidence interval for the proportion of the population that is not right-handed.

3. Explain why a confidence interval is preferred over a point estimate.

4. An exponential distribution has a mean of  $E(X) = \frac{1}{\lambda}$ . Data from an exponential distribution is collected:  $\{3.12, 5.17, 12.06, 18.72, 11.35, 8.04, 4.53, 21.07, 6.61\}$ . Use the method of moments to estimate the parameter  $\lambda$ .