## Math 6070-1, Spring 2014; Assignment #2

Assigned on: Friday January 24, 2014 Due: Wednesday January 29, 2014

- Complete reading the Statistics Primer at http://www.math.utah.edu/~davar/math6070/2014/Statistics.pdf.
- 2. Suppose  $X_1, \ldots, X_n$  is a random [that is, i.i.d.] sample from a Uniform $(\theta, 2\theta)$  distribution, where  $\theta > 0$  is an unknown parameter.
  - (a) Find the maximum likelihood estimator for  $\theta$ .
  - (b) Prove that the MLE is consistent.
  - (c) Calculate the bias of the MLE. Use your computation to verify that the MLE is asymptotically unbiased [that is, show that  $bias(\hat{\theta}) \to 0$  as  $n \to \infty$ ].