Math 180 Fall 2014 Assignment 5

The following is due on Tuesday, October 14

The following survey design has been proposed to explore the role of religion in the lives of the

faculty and staff at Harvard Law School. Using the Harvard Law School e-mail directory, a

sample of 100 faculty and staff will be selected and e-mailed the following:

1. How religious are you?

Not at all \_\_\_\_ Moderately \_\_\_\_ Very \_\_\_\_ Extremely \_\_\_\_

2. How often do you attend religious services outside your home?

Number of times per month \_\_\_\_

3. What was your last year’s income?

$ \_\_\_\_\_\_

4. How much did you contribute last year to organized religion?

$ \_\_\_\_\_\_\_

5. If Harvard Law School employed a non-denominational chaplain, how likely is it that

you would use his or her services?

Unlikely \_\_\_\_ Possibly \_\_\_\_ Very Likely \_\_\_\_

6. Do you believe that fundamentalist religious education (such as that which has resulted in

suicide bombings) is acceptable in American society?

Yes \_\_\_\_ No \_\_\_\_

1. Evaluate the survey. Which questions are likely to elicit honest and useful answers? Can

you suggest improvements? What shapes do you expect for the distribution of responses

to questions 2 and 3?

2. The following question is in a survey – what is the last digit of your telephone number?

What would the histogram of responses look like?

3. Using the data on Page 449 in the text, compute the mean and standard deviation for the

sample of Rates of Return for Mutual Funds. If the distribution of returns is Normal, what percent of funds would you expect had returns of 20 percent or more in the population?

*This question may involve too much computation if you do not know how to use any of the programs which compute standard deviations automatically. In that case, you may use the consolidated table on Page 452 provided that you indicate clearly that you have chosen this alternative and show all of your computations. (We will later examine whether the means for the load funds and no load funds are significantly different. For this Exercise, consolidate the lists.)*

4. The distribution of speeds on a particular stretch of the Mass Pike during non-rush hours is

approximately normal, with a mean of 68 MPH (the speed limit is 65 MPH) and a standard

deviation of 10 MPH. The police only have the resources to stop and ticket the 2 percent of

drivers who are going the fastest. What is the lowest speed for which they should ticket?