1. We are interested in estimating the concentration of a biomarker on the basis of measurements of a

number of technical replicates. Suppose measurements of such replicates will be approximately normally

distributed with unknown mean (the true concentration) and known SD = 0.75 units. How many

replicates should we measure if we wish our 95% confidence interval for the true concentration to have

width < 1 units?

2. This exercise is to assess whether a certain data generating mechanism (in this case, some normal

distribution) could have given rise to a particular sample of data.

(a) If X1,X2, . . . ,X15 are iid Normal(mean=2, sd=1.5), what is the chance of observing a sample

mean greater than or equal to 3.2?

Repeat (a) for the case the population SD is 1.5 but n=3.

Repeat (a) for the case the population SD is 1.5 but n=100.