MAT 223 Homework #11

1. as sample size increases the standard deviation of the sampling distribution decreases, regardless of the shape of the original distribution

2. See above

3. an estimator that has a sampling distribution centered around the true population value

4. $\frac{1178.14}{\sqrt{1000}} = 37.26$

5. $\sqrt{\frac{.497(.503)}{1513}} = .01285$

6. a. $100 - 99.5 = \frac{.5}{100} \div 2 = .0025$ invNorm(.0025) = 2.81

b. $100 - 75 = \frac{25}{100} \div 2 = .125$ invNorm(.125) = 1.15

c. $100 - 83 = \frac{17}{100} \div 2 = .085$ invNorm(.085) = 1.37

d. $100 - 92 = \frac{8}{100} \div 2 = .04$ invNorm(.04) = 1.75

e. $100 - 99.9 = \frac{.1}{100} \div 2 = 5 \times 10^{-4}$ invNorm(.0005) = 3.29

7. a. $100 - 90 = \frac{10}{100} \div 2 = .05$ invT(.05, 14) = 1.76

b. $100 - 85 = \frac{15}{100} \div 2 = .075$ invT(.075, 27) = 1.48

c. $100 - 99.9 = \frac{.1}{100} \div 2 = 5 \times 10^{4}$ invT(.0005, 23) = 3.77

d. $100 - 92 = \frac{8}{100} \div 2 = .04$ invT(.04, 8) = 2.00

e. $100 - 78 = \frac{22}{100} \div 2 = .11$ invT(.11, 30) = 1.25

8. a. normalcdf(−E99, 1.31) = .9049

b. normalcdf(−1.08, .75) = .6333

8c. normalcdf (39, E99, 41, 11) = .5721

d. normalcdf (-E99, .43, .48, $\sqrt{\frac{.48 \cdot .52}{1131}}$) = 3.82×10^{-4}

9. a. tcdf (1.45, E99, 21) = .0808

b. tcdf (-E99, -2.81, 9) = .0102