MAT 223, Paper Quiz #7, Spring 2017 Name KEY

Instructions: Show all work. Use exact answers unless specifically asked to round. Explain thoroughly using complete sentences.

1. The mean GPA of students at one particular school is 2.2 with a standard deviation of 0.8. The state college system guarantees admission to the top 15% of students at every public school in the state. What GPA does that correspond to at this school?

85% below

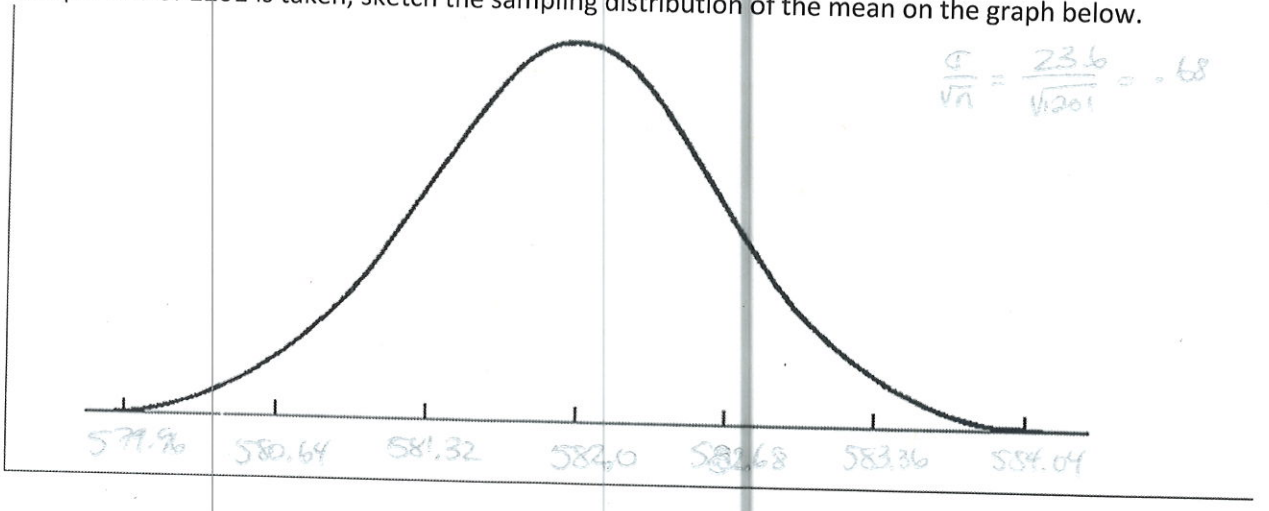
15% above

$\text{invNorm}(.85, 2.2, .8) = 3.029$

≈ 3.03

2. A variable is normally distributed with a mean of 582.0 and a standard deviation of 23.6. If a sample size of 1201 is taken, sketch the sampling distribution of the mean on the graph below.

$\frac{\sigma}{\sqrt{n}} = \frac{23.6}{\sqrt{1201}} = .68$

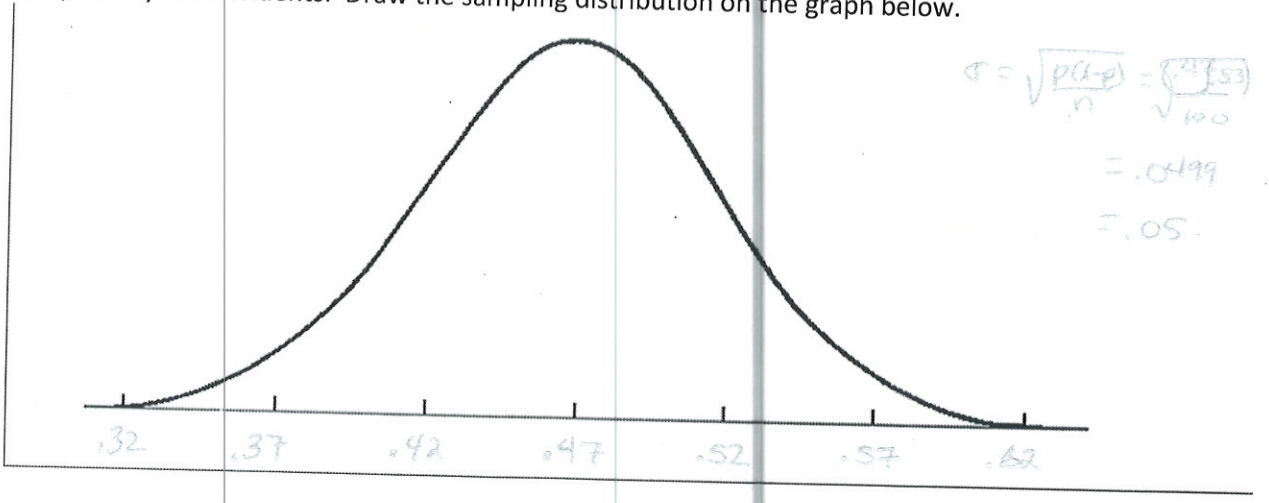


3. A school district thinks that 47% of their residents want to send their kids to a private school. They survey 100 residents. Draw the sampling distribution on the graph below.

$\sigma = \sqrt{\frac{p(1-p)}{n}} = \sqrt{\frac{(.47)(.53)}{100}}$

$= .0499$

$\approx .05$



4. Describe the conditions when we should use the t-distribution rather than the normal distribution.

for small sample sizes (distribution is normal)
or if σ not known (only s)

5. The mean length of 12 newly hatched iguanas is 7 inches with a standard deviation of 0.75. Construct a 90% confidence interval for the mean length of all newly hatched iguanas (assuming they are normally distributed).

T-Interval
Stats
$\bar{x} = 7$
$S_x = .75$
$n = 12$
C-level = 90%

(6.6112, 7.3888)