

Some Sample Problems for Exam 1

These are only a few *additional* problems to help you prepare for the exam. You should also be certain that you completely understand the Problems Sets, Reading Assignments, in-class work, and your class notes.

1. Gallup conducted a poll on Sept. 9–13, 2015, with a random sample of 1,025 adults, aged 18 and older, living in all 50 U.S. states and the District of Columbia. 53% of those polled say they have “a great deal” or “a fair amount” of trust in the judicial branch of the federal government.

- (a) Check that the conditions are satisfied to conclude that the sampling distribution of the proportion is approximately normal.
 - (b) Compute and interpret a 95% confidence interval for the proportion of adults in the U.S. who have trust in the judicial branch.
 - (c) Is it possible that the proportion of adults in the U.S. who have trust in the judicial branch is 59%? Discuss.
 - (d) What is wrong with this statement?

95% of the time, the population proportion p lies in the confidence interval I found in part (b)

2. A study finds that the resting heart rates of high school students are approximately normally distributed with mean $\mu = 72$ beats per minute (bpm) and standard deviation $\sigma = 10$ bpm.

Hint: You should always draw a picture for these types of problems.

- (a) What is the z -score for a resting heart rate of 67 bpm?
 - (b) What is the resting heart rate that corresponds to a z -score of $z = 1.68$?
 - (c) What is the probability that a randomly chosen student has heart rate above 85?
 - (d) What percentage of students have heart rates between 62 and 85?
 - (e) What is the range of heart rates for the lowest 10% of the students?
 - (f) What is the range of heart rates for the highest 15% of the students?
 - (g) What is the Interquartile Range for the heart rate of high school students?
 - (h) What is the probability that the average heart rate of a random group of 10 students is above 85?
 - (i) Suppose that the distribution of the resting heart rates of high school students is skewed left rather than being approximately normal. Which of the questions (a)–(h) could you answer? Explain.

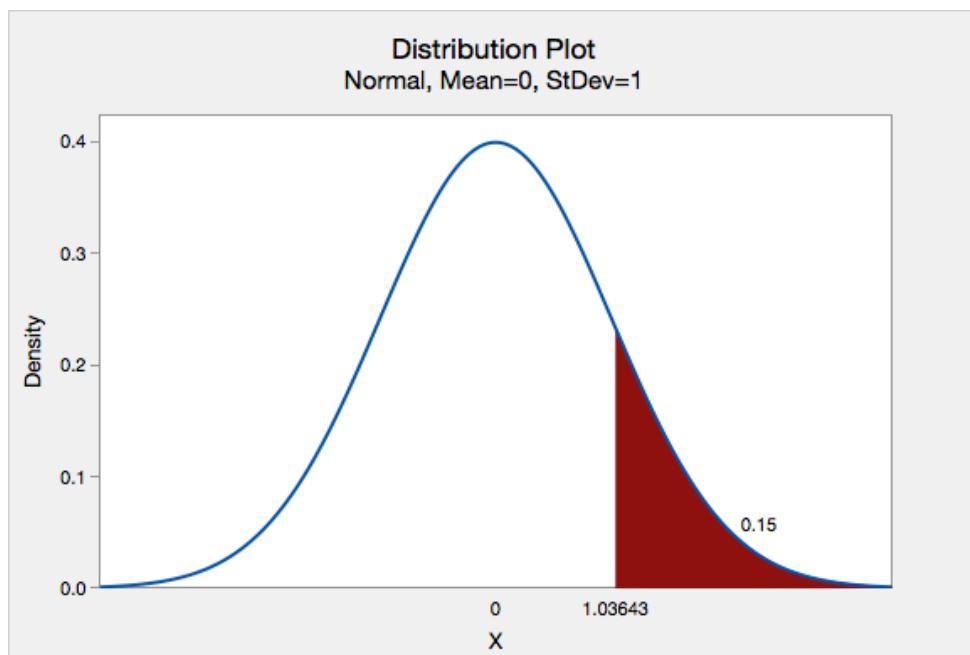
3. Rasmussen Reports wants to conduct the definitive poll for the proportion of support for Bernie Sanders in South Carolina. How large a sample should they use to guarantee that a 99% confidence interval will have a margin of error of at most 2 percentage points?

How would your answer change if Rasmussen wanted to find the proportion of support for Sanders in Texas?

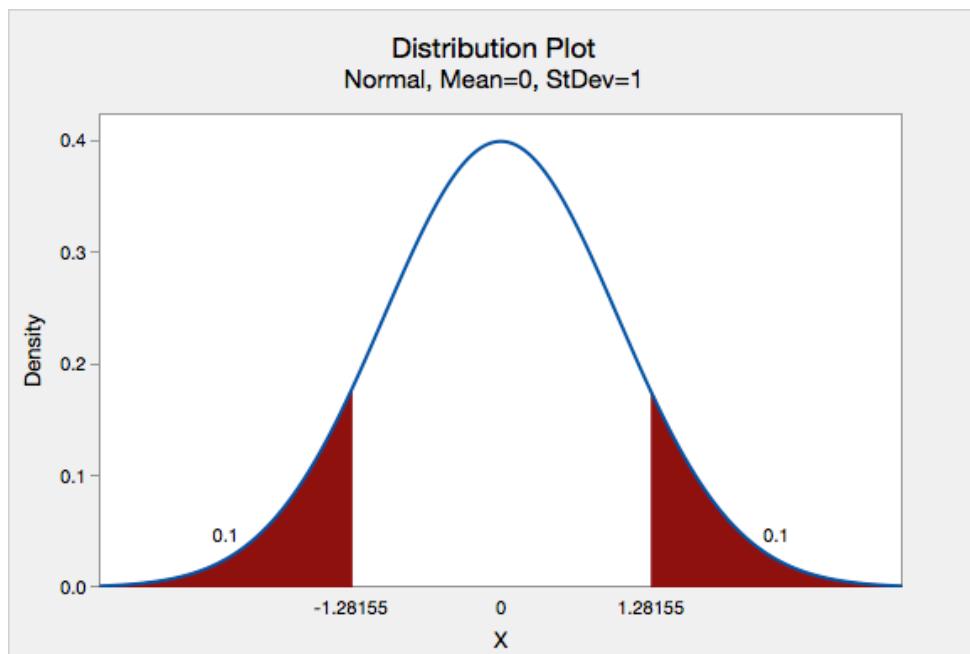
4. Problem 44 from Chapter 2 and Problem 19 from Chapter 3 could be good practice.

5. *Be sure to review all of the Problem Sets, in-class work, and Reading Assignments!*

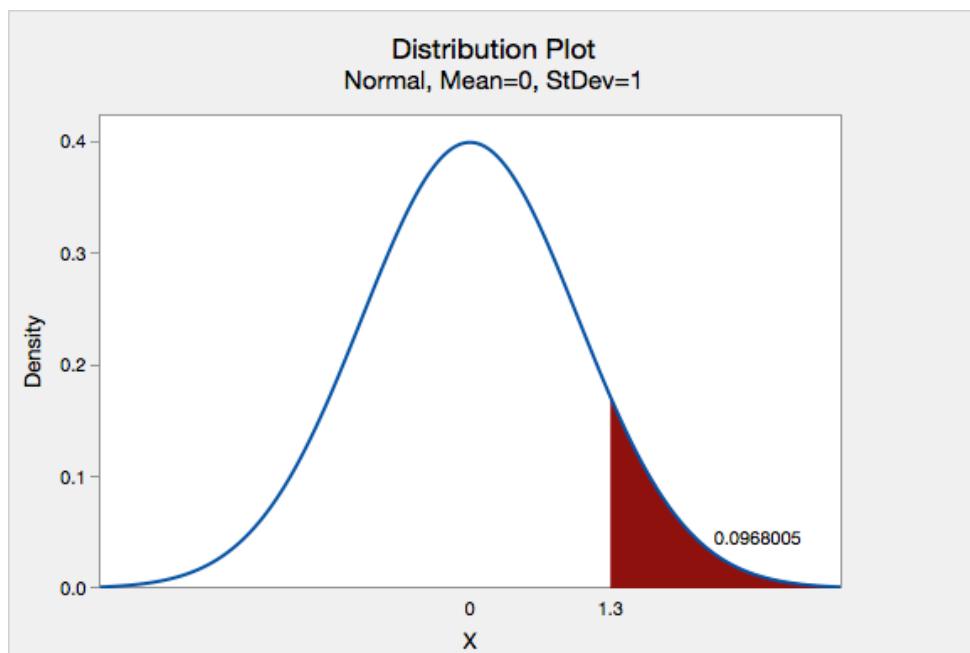
Graph #1



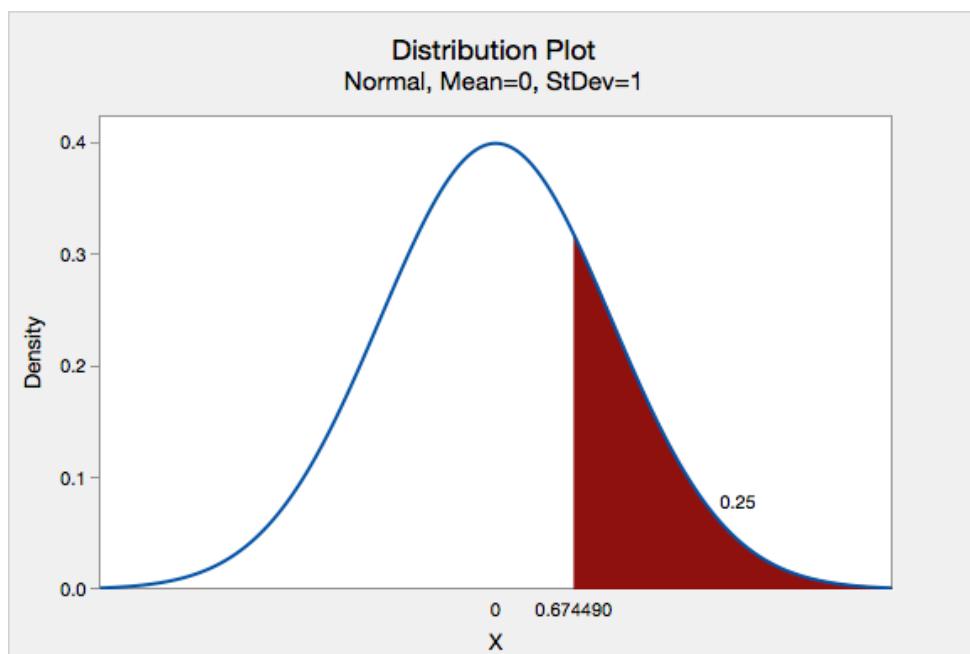
Graph #2



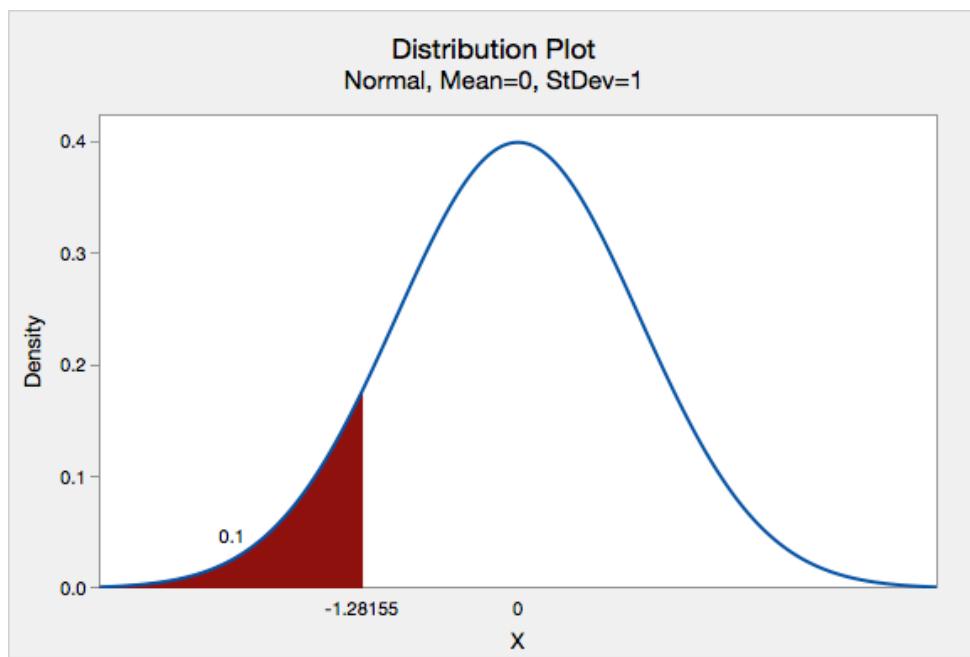
Graph #3



Graph #4



Graph #5



Graph #6

