Math 1601 Exam 3 Practice.
Show all calculations when appropriate. This is not homework; do not turn in.

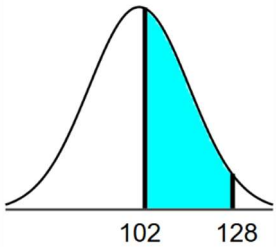
1. Find the following probabilities assuming a standard normal distribution: (3 pts each)
a. $P(-2.05 < z < 1.25) =$ b. $P(z > 2.33) =$

2. Find the **value of *a*** (a z-score) such that: (3 pts each)
a. $P(z > a) = 0.65$ b. $P(-a < z < a) = 0.90$

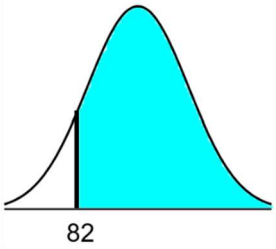
3. The birth weights of U.S. babies have a normal distribution with a mean of 7.2 pounds and standard deviation of 1.3 pounds. Find:
a. the probability that an individual baby chosen at random weighs less than 9 lbs. (4 pts)
b. the probability that a group of 5 babies chosen at random will have a mean weight between 6 lbs and 7.5 lbs. (4 pts)
c. the weight of an individual baby chosen at random would weigh more than 80% of the all other babies. (4 pts)

4. There is a 25% chance that a student at CSU Stanislaus is left-handed. A sample of 200 students is randomly selected. Find the probability that less than 70 students are left-handed. (4 pts)

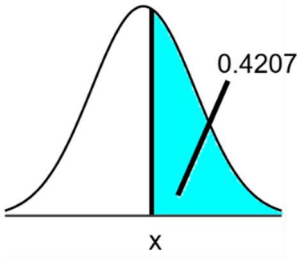
5. The graph depicts IQ scores of adults, and those scores are normally distributed with a mean of 100 and a standard deviation of 15. Find the area of the shaded region. (4 pts)



6. Find the area of the shaded region. The graph to the right depicts IQ scores of adults, and those scores are normally distributed with a mean of 100 and a standard deviation of 15. (4 pts)



7. The graph below depicts IQ scores of adults, and those scores are normally distributed with a mean of 100 and a standard deviation of 15. Find the indicated IQ score. (4 pts)



8. *Given that the overhead reach distances of adult females: $\mu = 205.5$ cm, $\sigma = 8.6$ cm, and overhead reach distances are normally distributed. The overhead reach distances are used in planning assembly work stations.*
a. If 1 adult female is randomly selected, find the probability that her overhead reach is between 179.7 cm and 231.3 cm. (4 pts)
b. If 40 adult females are randomly selected, find the probability that they have a mean overhead reach between 204.0 cm and 206.0 cm. (4 pts)

9. Assume that females have pulse rates that are normally distributed with a mean of 76.0 beats per minute and a standard deviation of 12.5 beats per minute. If 25 adult females are randomly selected, find the probability that they have pulse rates with a mean less than 79 beats per minute. (4 pts)

Key:
1. a. 0.8742; b. 0.0099
2. a. $a = -0.385$; b. $a = 1.645$
3. a. 0.92; b. 0.68; c. 8.29
4. 0.9993
5. 0.416
6. 0.8849
7. 103
8. a. 0.9974; b. 0.5086
9. 0.8849