

Continuous Distributions Homework

The following questions will test your understanding of the continuous distributions that we discussed in class.

1. Use the z-tables to find the value of z such that:
 - a. The area between 0 and z is .4750
 - b. The area to the right of z is .1314
 - c. The area to the left of z is .6700
 - d. The area between -z and z is .5000.

2. The length of time that it takes college students to calculate a midterm examination in a 50-minute class is normally distributed with a mean of 50 minutes and standard deviation of 5 minutes.
 - a. What is the probability that a student will finish in less than 40 minutes?
 - b. What is the probability that a student will take between 40 and 60 minutes to complete the exam?

3. The label on a bottle of liquid detergent shows it to contain 12 ounces. The filling operation has a tolerance of between 11.975 and 12.10 ounces. If the actual amounts in the bottles is uniformly distributed,
 - a. What is the likelihood that a bottle will contain between 12 and 12.05 ounces?
 - b. Quality control accepts production that is within .02 ounces of the stated quantity. What is the likelihood that a bottle will fail the quality check?

4. The mean hourly cost of operating a 737 aircraft is \$2071. Assuming that the hourly cost of the plane is normally distributed.
 - a. If 11% of the hourly costs are \$1,800 or less, what is the standard deviation of the operating costs?
 - b. What is the hourly operating costs of the lowest 3% of the planes?
 - c. What is the probability that the operating cost of a particular plane will fall between \$2,000 and \$2,500?