

MA 2621 - A 17

HW #6 (Problems 1-5)

Due T 10/10

- #1. A city temperature is modeled as a normal random variable with mean and standard deviation both equal to 10 degrees Celsius. What is the probability that the temperature at a randomly chosen time will be less or equal to 15 degrees Celsius?
- #2. A popular news magazine wants to write an article on how much Americans know about geography. They devise a test that lists 100 cities in the US, all of them mentioned in the news magazine in the last year. Each respondent must guess the state in which the city can be found. Some examples were: (Los Angeles, Tuscon, Biloxi.) Each correct answer earns one point. Assume the scores have normal distribution with mean 62 and standard deviation 12.
- a) What is the probability of scores are between 50 and 74 points?
 - b) A score of 45 is considered a poor performance. What percentage of scores is below this score?
- #3. A population of widgets produce by a machine has weights with mean of 200mg and standard deviation of 10mg. if a random sample of 36 widgets were taken,
- a) what is the probability that the mean weight is at least 196mg?
 - b) What is the probability that the total weight is at most 3100mg?

#4. Suppose X is standard normal and $Y = \begin{cases} -X & : X < 0 \\ \sqrt{X} & : X \geq 0 \end{cases}$.

- (a) Can transformation method be used to find the pdf of Y ? If yes find pdf Y using transformation method.
 - (b) Find pdf Y using cdf method.
- #5. Suppose X is exponential with parameter λ and $Y = e^X$.
- (a) Can transformation method be used to find the pdf of Y ? If yes find pdf Y using transformation method.
 - (b) Find pdf Y using cdf method.

Suggested Problems

Chapter-5: 19,20,21,23,25, Chapter-6: 21,23,25,26,27.