

DFSC 5340.02 Assignment 2

Due: Wednesday September 30th@11:59PM

Total Points: 150 (30 points for each question)

1. X is a normally normally distributed variable with mean $\mu = 30$ and standard deviation $\sigma = 4$. Find
 - a) $P(x < 40)$
 - b) $P(x > 21)$
 - c) $P(30 < x < 35)$
2. A radar unit is used to measure speeds of cars on a motorway. The speeds are normally distributed with a mean of 90 km/hr and a standard deviation of 10 km/hr. What is the probability that a car picked at random is travelling at more than 100 km/hr?
3. Entry to a certain University is determined by a national test. The scores on this test are normally distributed with a mean of 500 and a standard deviation of 100. Tom wants to be admitted to this university and he knows that he must score better than at least 70% of the students who took the test. Tom takes the test and scores 585. Will he be admitted to this university?
4. The length of life of an instrument produced by a machine has a normal distribution with a mean of 12 months and standard deviation of 2 months. Find the probability that an instrument produced by this machine will last
 - a) less than 7 months.
 - b) between 7 and 12 months.
5. The annual salaries of employees in a large company are approximately normally distributed with a mean of \$50,000 and a standard deviation of \$20,000.
 - a) What percent of people earn less than \$40,000?
 - b) What percent of people earn between \$45,000 and \$65,000?

c) What percent of people earn more than \$70,000?