

# Sample Problems For Section 8.5 and 8.6

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This collection of questions is intended to give you an idea of different types of question that might be asked on the exam. There may be questions on the exam that are not found on this handout.

These questions cover sections 8.5 and 8.6 in the Applied Finite Mathematics, 10<sup>th</sup> edition by S. T. Tan.

Video solutions can be found at this link: <http://www.math.tamu.edu/~kahlig/141WIRpage.html>

1. The amount of time between taking a pain reliever and getting relief is normally distributed with a mean of 23 minutes and a standard deviation of 4 minutes. Find the probability that the time between taking the medication and getting relief is as follows.
  - (a) at least 30 minutes.
  - (b) at most 20 minutes.
  - (c) exactly 20 minutes.
  - (d) at most 30 minutes and more than 20 minutes.
2. The time it takes an employee to package the components of a certain product is normally distributed with  $\mu = 8.5$  minutes and  $\sigma = 1.5$  minutes. As an incentive, management has decided to give special training to the 34% of employees who took the greatest amount of time to package the components. What is the longest amount of time that you can take and not have to attend the special training course?
3. The lifespan of a 60 watt light bulb is normally distributed with an average lifespan of 8,000 hours and a standard deviation of 15 days.
  - (a) What is the probably that a bulb selected at random will last at least 8,250 hours?
  - (b) If 4 light bulbs are selected at random, what is the probability that all of the bulbs will last at least 8,250 hours?
  - (c) How many bulbs in a shipment of 400 would last at least 8,250 hours?
4. If  $Z$  is normally distributed, compute  $P(-2 \leq Z < 1) =$
5. If  $X$  is a normally distributed random variable with mean of 43 and variance 64, find the value of  $A$  such that  $P(38 < X < A) = 0.425$