MATH 460: Probability & Statistics — September 2018

Chapter 4: Probability Distribution Functions

In-Class Activity #5 — Dr. Basilio

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Southern California Institute of Technology

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Chapter 4: Probability Distribution Functions

Inverse Normal Distribution

Activity 1: Inverse-Normal-Distribution

Find the 90th percentile for a normal distribution with a mean of 70 and a standard deviation of 4.5.

Activity 2: Inverse-Normal-Distribution

The time it takes employees to get to work from home (in minutes) is normally distributed with a mean of 30 minutes, and a standard deviation of 5 minutes. Find:

(a) the percentage of employees that take between 28 and 37 minutes to get to work (Hint: this is not an inverse problem)

(b) The number of minutes the longest it would take the bottom employee in the bottom 5% of the data to get to work. (Hint: this is an inverse problem)

Activity 3: Inverse-Normal-Distribution

An average light bulb manufactured in a factory lasts 280 days with a standard deviation of 45 days. Assume that bulb life is normally distributed.

(a) What is the probability that an Acme light bulb will last at most 360 days? (Hint: this is not an inverse problem)

(b) What bulb life separates the bottom 12%? (Hint: this is an inverse problem)

Poisson Distribution

Activity 4: Poisson-Distribution

A Life Insurance (LI) salesman sells on average 3 LI policies per week. Assuming a Poisson Distribution, calculate the probability that in a given week she will sell:

(a) some policies

(b) 2 or more but less than 5 policies

(c) Assuming a five day workweek, what is the probability that in a given day, she will sell a policy?