Homework 1

Monday, March 27, 2017 12:43 PM

Overall

- Submit on paper at the beginning of the class
- For each of the problems:
  - Wherever calculations are needed, use Matlab or Octave to help you find the answer. Include the code (commands) you used to obtain the answer
    - Check out the Material->References tab for some useful links
  - Show all your computations/process (even if you use a pre-made function, besides the code, you must show what formula you used)
  - Solution: Besides just giving a numerical answer, provide an interpretation of the results (the ***why's***, and the ***how's***, not just the what's)
- If you used any external reference (e.g., book, internet, classmate) you must cite it

Part I

1. The following are measurements of the solar intensity over different days on an island in the South Pacific

753	730	653	498	960
955	939	905	835	693
957	952	935	898	820
661	946	940	918	870
768	558	918	909	878
806	655	856	809	704
775	775	708	869	562

   a. Calculate the sample mean and the sample standard deviation
   b. Plot a dot diagram (1D scatter plot) and indicate along the axis where the mean falls
   c. Provide a practical interpretation of the sample mean

2. Using the data provided in the text file below, construct:
   a. A cumulative frequency plot using 8 bins
   b. A histogram using 8 bins
   c. Repeat (a) using 16 bins
   d. Repeat (b) using 16 bins
   e. Explain the practical relevance of the difference between the plots using these two different amount of bins (e.g., pros and cons)

Data	 HW1_probl..

3. The following function describes the probability density function of the weight of packages that arrive at a carrier service:

$$f(x) = \frac{70}{69x^2} \quad for\ 1 < x < 70\ lbs$$

   a. What is the probability that a package weighs less than 10lb?
   b. Find the mean and variance of package weight
   c. If the shipping cost is $3 per lb, what is the average shipping cost of a package?