Statistics and Data Analysis, Fall 2017
Pre-lecture Problems for Lecture 3

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Note 1. The deadline of submitting the pre-lecture problem is **18:35, October 11, 2016**. Please submit a hard copy of your work to the TA in class. Late submissions will not be accepted. Each student must submit her/his individual work. Submit ONLY the problem that counts for grades.

Note 2. Please make your answer as clear (i.e., easy to read) as possible. We reserve the right to take away points when the correctness cannot be easily determined (e.g., when the writing is messy and cannot be easily understood).

1. (0 points) Draw a scatter plot for the following data set:

i	x_i	y_i
1	5	4
2	3	7
3	7	12
4	5	-2
5	4	0
6	1	5
7	9	4
8	7	8
9	12	2
10	3	13

   Say something about the relationship between the two variables.

2. (0 points) There are four regions in the Taiwan island: North, Central, South, and East. For each region, the population density (number of residents per square kilometer) is calculated as d_1, d_2, d_3, and d_4. Explain why a pie chart is not appropriate for comparing these four numbers. How about a bar chart?

3. (10 points) Consider the following thirty numbers:

   $$68, 99, 14, 45, 21, 64, 46, 33, 73, 85,$$
   $$33, 76, 45, 35, 57, 26, 74, 82, 90, 8,$$
   $$44, 66, 13, 51, 33, 68, 27, 33, 37, 80.$$

   (a) (4 points) Construct a frequency distribution with classes $[0, 20)$, $[20, 40)$, $[40, 60)$, ..., and $[80, 100)$. For each class, find its frequency and relative frequency.

   (b) (2 points) Find the *modal class*, i.e., the class(es) that has the highest frequency.

   (c) (4 points) Construct a pie chart for two categories: the odd numbers and even numbers. Use the pie chart to show the percentage of odd numbers and that of even numbers.