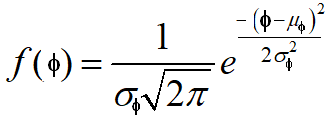
**MAT 271E Probability and Statistics**

**HOMEWORK 2**

Each student is provided with **15** numbers (corresponding to some selected **φ** values).

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1,** | **3,** | **,4** | **12,** | **21,** | **33,** | **38,** | **43,** | **56,** | **67,** | **87,** | **98,** | **100,** | **110,** | **123** |

1. Calculate the **mean μφ** and the **standard deviation σφ** of the given numbers (**φ**).
2. Using the following equation and the calculated **mean μφ**and **standard deviation σφ,**calculate each **f(φ)** value that corresponds to each **φ**.



1. Plot the distribution as an **φ against f(φ)** graph.

(**Hint**: You should be getting a **normal distribution curve**similar to the graph on slide 14 in MAT271E\_PART 7.pdf file (M. Bayazıt, B. Oğuz, Fig. 4.1 , pg. 80).

(In this way, you have generated your own **normal distribution data f(φ),** using which, you will do all the following normal distribution calculations.

1. Calculate the **mean μ** and the **standard deviation σ** of the **f(φ)** data you generated. Subsequently, calculate the standardized variable **z** for each **f(φ)** value using the equation on slide 15 (M. Bayazıt, B. Oğuz, Eq. 4.2 , pg. 80)
2. Find the probabilities corresponding to each **z** value using the **probability distribution function (normal distribution) table** given on slide 17 (M. Bayazıt, B. Oğuz, Table 4.1 , pg. 81).
3. Plot the probabilites obtained from the table against **f(φ)** to form a normal probability paper plot. Plot a trendline to more clearly see the linearity.

(**Hint**: You should be getting a nearly straight line that shows a normal distribution,similar to the graph on slide 20 (M. Bayazıt, B. Oğuz, Fig. 4.2 , pg. 82).

1. From the normal probability paper plot you obtained, again find the **mean** and the **standard deviation** of the **f(φ)**data, using the equations provided on slide 21 (M. Bayazıt, B. Oğuz, pg. 80). Compare those values with themean and the standard deviation values you had already obtained for section d of the homework.
2. Calculate the skewness coefficient of the **f(φ)**data.