

# MA204: Mathematical Statistics

## Assignment 1

Part I (**Weights 4%**):

Submit your solutions for randomly selected 5 questions from Q1.1 ~ Q1.9 on pages 53–55 of Lecture Notes <<Mathematical Statistics>>, plus the following question

**1.10** Suppose that the moment generating functions of two independent random variables  $X$  and  $Y$ , are given by

$$M_X(t) = e^{t^2/2},$$

and

$$M_Y(t) = e^{2t^2 - t},$$

respectively. Let  $W = 3X + 2Y$ ,

(a) Calculate the probability  $\Pr(-12 < W < 3)$ .

(b) Calculate  $E(W^2)$ .

## Part II (**Weights 1%**):

Please find one question (denoted by Q1.11) from any textbooks of mathematical statistics (in English) satisfying the following conditions

1. The content of your Q1.11 must belong to Chapter 1 of Lecture Notes <<Mathematical Statistics>>.
2. 请标明你的 Q1.11 是来自哪一本书的哪一页, for example:

Miller, I. and Miller, M. (2004). John E. Freund's Mathematical Statistics with Applications (7-th Edition). Prentice-Hall, New Jersey, Pages 6-7.

3. 你可以从任何中文的数理统计书中找一个题目及答案, 但要翻译成为英文.
4. 你的 Q1.11 既要不同于本教科书中的任何 **Examples**, **Exercises**, 也要不同于 **Tutorial** 中的任何 **Examples** 以及本课 QQ 群中所给的 **100 Problems**.
5. **Please submit the question Q1.11 itself with your solution.**
6. 鼓励用 **Word** 或 **Latex** 编辑
7. **Q1.11 and its solution should be submitted to 徐彬同学.**