

Assignments #09 of
Econometrics I & Advanced Econometrics I (2013SY)

June 28, 2013

Instruction to students

1. Dead line for submission: **July 3, 2013**. Please submit your answer at the end of the class.
2. Use A4 size papers to answer.
3. The answer may be written in Japanese as well as English.

Q1

Let X_1, X_2 be mutually independent random variables which follow standard normal distribution. Answer following questions.

- (1) Find $f(y)$, the probability density function of $Y = X_1 - X_2$.
- (2) Draw the graph of $f(y)$.

Q2

Suppose X, Y are mutually independent random variables and assume

$$X \sim N(0, 1), \quad Y \sim \chi^2(1).$$

Answer following questions.

- (1) Find $g(w)$, the probability density function of $W = \frac{X}{\sqrt{Y}}$.
- (2) Find the probability density function of $Z = W^2$ with the result which you had in (1). And show that density function coincides with the density function of F distribution ($F(1, 1)$).