

# HW 1 (MATH 4750/5750)

## From the Textbook

Questions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, and 1.8

- 7 out of 8 Question (for Undergraduates)
- All Questions (for Graduates)

## Extra Question

Follow the example we had in the classroom, find the  $E(X)$  and  $Var(X)$  based on (i) equations (2.1) and (2.2), and (ii) simulation for the following cases. Does (i) and (ii) give you the same result?

(a)  $X \sim \chi^2(\nu = N + 1)$ , where  $N \sim Poisson(\lambda)$ .

(b) (Only for Graduate Students)  $X \sim Binomial(n = Y, p = P)$ , where  $Y \sim Poisson(\lambda)$  and  $P \sim Beta(\alpha, \beta)$ .