Math 170S
Homework for Section 6.3 [*†]
Instructor: Swee Hong Chan

Note: Homework will not be collected, but the question for Quiz 2 might be picked from the homework questions.

1. Let $X_1, X_2, \ldots, X_5$ be independent exponential random variables with parameter θ, i.e., each X_i has pdf
$$f_{X_i}(x) = \begin{cases} \theta^{-1} e^{-x/\theta} & \text{if } x \geq 0; \\ 0 & \text{if } x < 0. \end{cases}$$
Let $Y_1 < Y_2 \ldots < Y_5$ denote the order statistics of $X_1, \ldots, X_5$.
   (a) Compute the pdfs of $Y_1, \ldots, Y_5$;
   (b) Compute the cdfs of $Y_1, \ldots, Y_5$;
   (c) Plot the pdfs of $Y_1, \ldots, Y_5$.
2. Solve Problem 6.3-14 in the textbook.

[*]Version date: Saturday 11th April, 2020, 20:14.

[†]This homework is based on Hanbaek Lyu's and Liza Rebrova's homeworks from the previous quarter, and I would like to thank her for her generosity here. "*Nanos gigantum humeris insidentes* (I am but a dwarf standing on the shoulders of giants)".