MATH48181/68181: EXTREME VALUES AND FINANCIAL RISK
SEMESTER 1
QUIZ PROBLEM 10
(Deadline: Tuesday 19 January 2021, 12:00noon)

Suppose $(X_1, Y_1), (X_2, Y_2), \ldots, (X_n, Y_n)$ is a random sample from the joint probability density function

$$f_{X,Y}(x, y) = x + y$$

for $0 \leq x, y \leq 1$. Find the limiting bivariate extreme value distribution of $(M_{n,1}, M_{n,2})$ if there is one, where $M_{n,1} = \max(X_1, X_2, \ldots, X_n)$ and $M_{n,2} = \max(Y_1, Y_2, \ldots, Y_n)$.

This problem is worth 1 mark. Marking scheme: 1 mark if the answer is correct, and the derivation is correct and detailed enough; 0.5 mark if the answer is correct, and the derivation is incorrect or not detailed enough; 0.5 mark if the answer is incorrect or not given, but the derivation is correct and detailed enough; 0 mark if the answer is correct, but the derivation is not detailed enough; 0 mark if the answer is incorrect, and the derivation is not detailed enough.

Please upload your solution to Blackboard. I will mark your solutions and email your mark, feedback and scanned work to you within 24 hours of the deadline. PLEASE DO NOT FORGET TO WRITE YOUR FULL NAME AND ID.