Suppose $C_1, C_2, \ldots, C_p$ are known copulas. Show that the following is a copula

$$C\left(u_1, u_2\right) = \left[C_1\left(u_1, u_2\right)\right]^{\alpha_1} \left[C_2\left(u_1, u_2\right)\right]^{\alpha_2} \cdots \left[C_p\left(u_1, u_2\right)\right]^{\alpha_p},$$

where $\alpha_1, \alpha_2, \ldots, \alpha_p$ are non-negative real numbers summing to 1.

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.