SUFFICIENCY AND JENSEN'S INEQUALITY FOR CONDITIONAL EXPECTATIONS

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Abstract. For finite sets of probability measures, sufficiency is characterized by means of certain positively homogeneous convex functions. The essential tool is a discussion of equality in Jensen's inequality for conditional expectations. In particular, it is shown that characterizations of sufficiency by Csiszár's f-divergence (1963, *Publ. Math. Inst. Hung. Acad. Sci. Ser. A*, **8**, 85–107) and by optimal solutions of a Bayesian decision problem used by Morse and Sacksteder (1966, *Ann. Math. Statist.*, **37**, 203–214) can be proved by the same method.