Meeting: 1003, Atlanta, Georgia, SS 9A, AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates, I

1003-54-1295 **Gwen Spencer*** (gspencer@hmc.edu), Department of Mathematics, Harvey Mudd College, 1250 N. Dartmouth Ave., Claremont, CA 91711, and **Francis E. Su** (su@math.hmc.edu), Department of Mathematics, Harvey Mudd College, 1250 N. Dartmouth Ave., Claremont, CA 91711. *The LSB theorem implies the KKM lemma.*

The Lusternik-Schnirelman-Borsuk Theorem and the KKM Lemma are well-known topological set-covering theorems. The LSB Theorem describes a common consequence of coverings of the sphere, whereas the KKM Lemma describes a common consequence of special coverings of the simplex. We will introduce these theorems, present some examples which motivate the question of their relationship, and then present an original proof in which KKM follows from a very immediate generalization of LSB. The construction used in this proof is novel since it requires only introductory topology and a moment of insight from basic polytope theory. (Received October 04, 2004)