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**Problem Set 9**  
**Topological Methods in Geometry**  
SS 2011

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**Problem 1.** Prove that  $(K * L)_{\Delta}^{*2} \cong K_{\Delta}^{*2} * L_{\Delta}^{*2}$

**Problem 2.** Using the technique covered in class, prove that  $K_{3,3}$  is not planar.

**Problem 3.** Prove that  $Ind_{\mathbb{Z}_2}(X * Y) \leq Ind_{\mathbb{Z}_2}(X) + Ind_{\mathbb{Z}_2}(Y) + 1$