Math 285D, HW2, Due Wednesday, November 21, 2007

1. Show that if A_1 and A_2 are both Σ^1_1 sets, then so are $A_1 \cap A_2$ and $A_1 \cup A_2$.

2. Suppose $B, C \subset \omega \times 2^\omega$ are disjoint Π^1_1. Suppose that for every Δ^1_1 set D there exists n with

$$D = B_n = 2^\omega \setminus C_n.$$

Show that the set $\{n : C_n = 2^\omega \setminus D_n\}$ is not Δ^1_1.

3. Suppose F is a countable Borel equivalence relation on a Polish space X. Suppose B is a Borel set meeting each F-equivalence class in a non-empty set. Suppose the restriction of F to B is hyperfinite.

Show that F itself (on all of X) is hyperfinite.