INF223 Categories for Software Engineering
Spring 2006

— Exercise Set 3 , for group meeting 10.02.2006 —

1. We want to validate that isomorphic objects have the same "social life" (w.r.t. outgoing relations): Let $f : x \to y$ be an isomorphism in a category **C** with $f^{-1} : y \to x$ the corresponding inverse. Show that for every object $z : \mathbf{C}$ the mappings $(f^{-1}; \_) : hom_C(x, z) \to hom_C(y, z)$ and $(f; \_) : hom_C(y, z) \to hom_C(x, z)$ are indeed iso's in **SET**, i.e., bijective mappings.
   Hint: Try to show that $(f; \_) = (f^{-1}; \_)^{-1}$.

2. (a) Prove for any category **C**: If $f; g$ mono (resp. epi), then so is f (resp. g) .

   (b) Show that $f; g$ mono does **not** entails, in general, that g is mono as well.