Homework 10
Due Wednesday, November 30th

1. Let R be a ring, let L, M, Q be left R-modules, and let $f : L \longrightarrow M$, $g : L \longrightarrow Q$ be R-module homomorphisms. Show that $M \oplus_L Q$ satisfies the universal property of fiber sums given in class.

2. Do the following exercises from Dummit and Foote:
p. 403–404 (1st copy): 4, 5 (also deduce that projective modules are flat), 6, 7, 10(c): show that if N is an injective module, then $\mathrm{Hom}_R(R, N)$ is injective;
p. 385–387 (2nd copy): 15, 16, 27(a).