

HW #4, due 10-25

Math 504A

1. By analogy with projective modules over rings, define a group P to be *projective* if given any surjection $\pi : G \rightarrow H$ and a homomorphism $g : P \rightarrow H$ one can lift g to G ; that is, there is a homomorphism $f : P \rightarrow G$ such that $\pi f = g$. Show that P is projective if and only if it is free.
2. (20 points) DF Exercise 1, p. 403.
3. Exercise 2, p. 403.
4. Exercise 9, p. 793.. Also finish 10.5 and read 17.1.