

## Homework number 8

Do both exercises.

**Exercise 18.** Compute  $\pi_k(\mathbb{R}P^n)$  in terms of  $\pi_k(S^n)$ .

**Exercise 19.** Let  $Y$  be a connected space with a base point  $y_o$  such that the couple  $(Y, \{y_o\})$  has the homotopy extension property. Then every continuous map  $f : S^k \rightarrow Y$  can be extended to  $F : D^{k+1} \rightarrow Y$  if and only if  $\pi_k(Y, y_o) = 0$ .