

548 - Spring 2018 - HW5

February 19, 2018

1. Let X and Y be two spaces. Prove that the natural projection map $X \times Y \rightarrow Y$ is a Serre fibration.
2. Prove Hatcher, Theorem 4.8 using model category techniques.
3. Prove Hatcher, Proposition 4.13 using the model category.
4. Prove Hatcher, Proposition 4.15 using model categories.
5. Prove Hatcher, Proposition 4.17 using model categories.
6. Prove that $\pi_i S^n = 0$ for $i < n$ using the techniques developed in class and in Hatcher, Section 4.1.