MAT 215A, Winter 2023
Homework 6

Due before 10:00 on Friday, March 17

Please write the homework solutions in connected sentences and explain your work. Mark the answers to each question. Scan or take pictures of your homework and upload it to Gradescope before due time.

1. Compute $\pi_2(\mathbb{RP}^n)$ for all n.

2. Prove that any map from S^2 to T^2 is homotopic to a constant map.

3. Prove that $SU(2)$ is homeomorphic to S^3.

4. a) For $n > 1$ construct a locally trivial fibration $SU(n) \to S^{2n-1}$ with fiber $SU(n-1)$. *Hint: this is similar to the consruction for $SO(n)$ from lecture.*

b) Compute $\pi_1(SU(n))$ for all $n > 1$.