## Spring 2021, Math 621: Preliminary Problem Set 5 Due: Thursday, February 25th, 2021 The Fundamental Group

**Preliminary problems.** These should be submitted to Gradescope before Thursday discussion.

(P1) Find a non-contractible closed path  $\gamma:[0,1]\to\mathbb{RP}^2$  whose concatenation  $\gamma^2$  is contractible.