

**Spring 2021, Math 621: Preliminary Problem Set 3**  
**Due: Thursday, February 11th, 2021**  
**Homotopy Equivalence (Week 1)**

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

(P1) Write an explicit deformation retraction from  $X = I \times I$  to the subspace  $A = I \times \{\frac{1}{2}\} \subset X$ .