EXAM 1 - ALGEBRAIC TOPOLOGY

LAST NAME, First name:

Grade:

The exam will last 45 minutes. No document or electronic device is allowed.

Exercise 1.

♦ What is the definition of a simply connected space?

Exercise 2.

\diamond Show that a contractible space is path connected.



Exercise 3.

♦ We consider the subset $C := \{(x, y, z) \in \mathbb{R}^3 | x^2 + y^2 = 4, -1 \leq z \leq 2\}$ of \mathbb{R}^3 . What is the fundamental group $\pi_1(C, (2, 0, 1))$ of C? Justify your answer.



Exercise 4.



Exercise 5.

\diamond Is the circle S^1 a retract of the disque B^2 ? If yes, prove it, otherwise justify your answer.

