

This is a preview of what students will see when they are submitting the assignment. Interactive features are disabled.

Homework Assignment 10



Solve and submit your solutions of the following problems. Note that the late policy is very strict - you will lose 5% for each hour that you are late. In other words, please submit on time!

Due date

Tuesday, December 3, 2024 11:59 pm (Eastern Standard Time)

Late penalty

5% deducted per hour

Q1 (30 points)

Take as givens the definition of $\pi_1(X, x_0)$, the notion of a category, the notion of a functor, the category \mathbf{Top}_0 , and the category \mathbf{Grp} . With this, complete the definition of π_1 and prove that it is indeed a functor $\pi_1 : \mathbf{Top}_0 \rightarrow \mathbf{Grp}$.

What exactly do you need to prove? There are several things. Each of them is easy, yet each should be mentioned and proven. To a large extent, the challenge in this question is to unwrap the definitions and figure out what exactly must be shown.

You will be marked for completeness, for accuracy (not a shred of vagueness, please, and every bit of notation that you use must be used correctly), for writing (which must be text-book level), and, and that one is hard, for brevity. What can be proven in 2 lines must not be proven in 5.

Note that each of the many little things that must be proven can be proven in 2 lines or less.

Your solution must also be very clean and readable.

Ready to submit?

- Please ensure all pages are in order and rotated correctly before you submit
- You will not be able to resubmit your work after the due date has passed.

 Please wait...