

# Homework exercise 2, Topology

## Exercise

What is the interior and the closure of  $\mathbb{Q}$  in  $\mathbb{R}$  if we give  $\mathbb{R}$ :

- a) the discrete topology? (1pt)
- b) the co-finite topology? (2pt)
- c) the co-countable topology? (2pt)
- d) the Euclidean topology? (2pt)

You may use without proof that for all  $a, b \in \mathbb{R}$  with  $a < b$  there exist a rational and an irrational number strictly between  $a$  and  $b$ .

Note that this is Exercise 2.50 of the lecture notes, but in a different order.

The mathematical quality of the writing will count for 2 points.

## Hand in instructions

I will grade the assignment on paper, so it is appreciated if you hand it in on paper. Since the tutorial sessions are all over the campus, either hand it in at my tutorial in BBG 007, or before the start of the lecture in pangea. (I will make sure to be there to collect them.) To make sure that no assignments get lost, also submit it in blackboard. If you do not hand it in on paper, please hand in a Latexed file, so I can easily print it. Your solution can be in Dutch or in English. The deadline for the assignment is 30 November at 15:00.