

## HW1 Reflection

For the entire homework set, make sure to also include:

- a reflection on the assignment and your solutions. Reflections may include
  - discussion of how routine or challenging the assignment was,
  - approximation of time spent on the assignment or on individual exercises,
  - details about particular difficulties or false starts,
  - explanations of why solutions are incomplete or incorrect, etc.
- a self-assessment (C/R/M) for the entire assignment.

Interestingly enough, I already worked with the  $p$ -adic metric in my Advanced Calculus course, so completing exercise 2 was relatively easy. As he said, the  $p$ -adic metric is useful in number theory for finding interesting properties of numbers, but is not used very much in other branches of mathematics. As for exercise 3, I similarly have already experienced some of the ways to prove metric distances, so this was pretty straightforward. The only issue I was having was with part (b), which I left unanswered since I could not formulate a proof. I'm pretty sure the way that you solve this is by showing that for every point  $x$  in  $U$ , there exists some  $\delta$  such that when  $d(x,y) < \delta$  then  $y$  must also be in  $U$ . However, I don't see how the hint you gave us is supposed to help with the proof. Overall I spent not a lot of time thinking about the solutions, but a lot more time writing them out, since you have to be specific when working with metrics.