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MA 504
Fall 2022

Homework 2

Due September 9th on paper at the beginning of class. Please let me know if you have a question or find a mistake.

1. For each of the following subsets of $\mathbb{R}$, determine whether the set is open and whether it is closed. Also, find the interior, the limit points, and the closure. For this problem you do not need to provide any proofs.

    (a) $\{1, 2, 3\}$.

    (b) $[-1, 0) \cup (0, 1]$.

    (c) $\{(-2)^{-n} : n = 1,\, 2,\, 3,\, \ldots\}$.

    (d) $\mathbb{Q}$.

    (e) $\mathbb{R} \setminus \mathbb{Q}$.

2. Exercise 5 from page 43. For this problem you can also skip the proof, but state what the limit points are.

3. Exercise 6 from page 43.

4. Exercise 8 from page 43

5. Exercise 9 from page 43.