

Problem Sequence - Solutions

This document will be filled up with the solutions from the problem sequence.

Solution 1 (Greg)

From Axiom 1, there are three cases to consider:

1. $p = 0$

p is equal to the only element of M . From the definition of limit point, every segment containing p must contain a point of M different from p . However, there are no points in M different from p , so p must not be a limit point of M .

2. $p > 0$

From Axiom 3, there exists a point a such that $0 < a < p$. There also exists a point b such that $b > p$. Since $p > 0$ and $b > p$, Axiom 2 tells us that $b > 0$. We can then form the segment $S = (a, b)$. Since $a > 0$ and $b > 0$, 0 is not between a and b , so S does not contain 0 . However, $a < p < b$, so S contains p . S is a segment containing p that does not contain any element of M , so p is not a limit point of M .

3. $p < 0$

(symmetric to the $p > 0$ case)

Therefore, regardless of our choice of p , we can construct a segment that contradicts the requirements in the limit point definition, so p is not a limit point of M .

Solution 2 (Jeff)

Solution 3

Solution 4 (Erin)

Solution 5 (Greg)

Solution 6 (Zack)

Solution 7 (Amber)

Solution 8 (Greg)

Solution 9

Solution 10

Solution 11

Solution 12

Solution 13

Solution 14

Solution 15

Solution 16

Solution 17

Solution 18