

SPS Problem of the Week 10/17/2020-10/24/2020

Problem 1. Take the real plane \mathbb{R}^2 and remove from it a countable number of points $a_1, a_2, a_3, \dots \in \mathbb{R}^2$. Show that given any two points of the remaining plane $\mathbb{R}^2 - \{a_n\}$, they can be connected by a continuous path.

A **continuous path** between two points a, b of a set M is a function $f : [0, 1] \rightarrow M$, such that f is continuous and $f(0) = a$, $f(1) = b$.

Hint: How many lines pass through a given point of \mathbb{R}^2 ?