# Finite Space Construction

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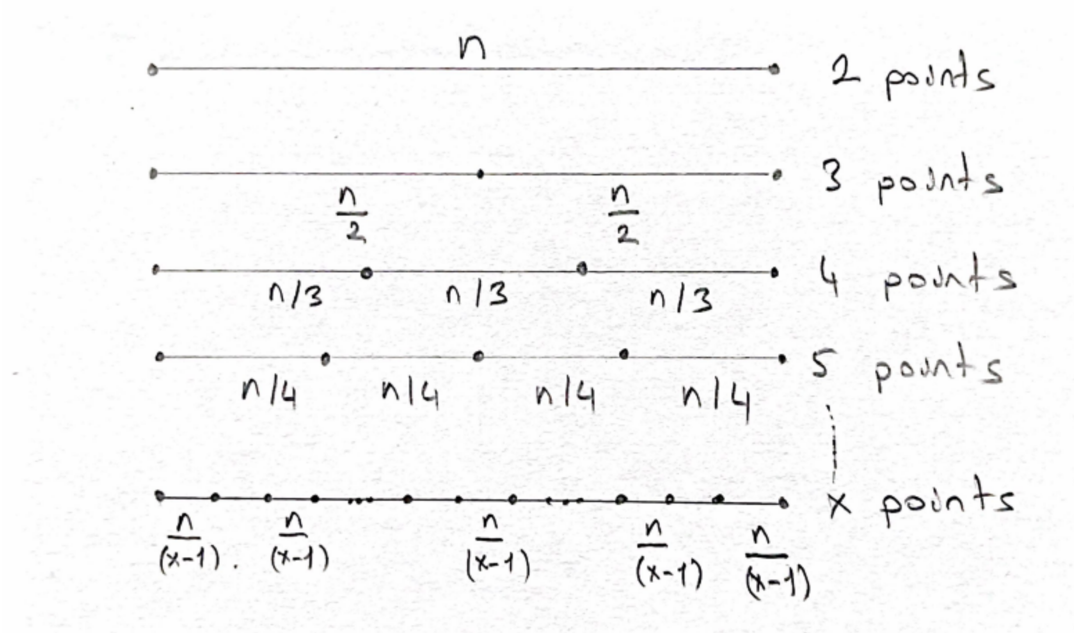
## 1 Introduction

Former teachings of mathematical spaces taught us that spaces can be both finite and infinite. For example, we are told the real number line extends infinitely while constituting an infinite space. This paper says that when a space is constructed by the smallest entity, a point— which is finite— then all spaces of all dimensions are finite. Hence, this paper is going to show you how an infinite number of points constitutes a finite space.

## 2 Proof



$$\lim_{x \to \infty} x = \infty \ \rightarrow \lim_{x \to \infty} n/(x-1) = 0$$

The statement above tells us that as the number of points reaches infinity, the number of divisions on the line becomes infinite while making the gaps infinitely approach zero in length, thus making the gaps between any consecutive points zero, which means that if there is an infinite number of points between any two points, they constitute a continuous finite line. You will see that if there is a finite number of points, gaps never become zero, which means that a finite number of points cannot constitute a continuous finite line.

# 3 Results

We can conclude that the same proof can be applied to spaces of all dimensions because, by the same principle, an infinite number of finite lines constitutes a finite plane, and an infinite number of finite planes constitutes a finite 3-D space, whereby 2-D and 3-D spaces are finite. Therefore, outer space is finite.

We can formally show that infinite spaces cannot be constructed using the proof, that is, if you replace n with $\infty$ it becomes,

$$\lim_{x \to \infty} \infty/(x-1) = \infty/\infty$$

which is an indeterminate form. According to the formula, in order to constitute a space of any kind, whether it be finite or infinite, gaps have to close. However, existing indeterminate form says nothing about whether gaps close or not Therefore, technically, infinite spaces are undefined.