Drafted Notes

The goal of this document is to begin our investigation of understanding wtf the Jordan Curve Theorem (JCT) is even talking about!

First Definitions

To establish context, we will define the following:

- Separation
- Connectedness
- Components
- JCT

Sets

Sets are things that exist lol.

Ordered Pair

Ordered pair (a,b) is {a,{a,b}}

Zahlen

Zahlen is subsequent subsets of null set. {} equals 0 {{}} 1 {{{}}} -1 {{{{}}}} 2

Quotients

Quotients are ordered pairs of integers (Top, Bottom) with equivalence relation making equivalent fractions equal (2,4) is equal to (-1,-2)

Reals

A cut r is defined to be the set of all quotients that are less than quotient (r,1). Let R be the set of all dedekind cuts of quotients.

Topology

Set of open sets. (do we need open balls?)

Topological Space

(R,O) R is underlying set, O is topology

Cartesian Product

Set of all possible ordered pairs for two different sets.

Function

Subset of cartesian product such that its a function.

Continuity

Go backwards through the function and you get an open ball.

Separated

Let X be a topological space. A **separation** of X is a pair U, V of disjoint nonempty subsets of X whose uninon is X.

Connected

The space X is said to be **connected** if there does not exist a separation of X.

Component

Given X, define an equivalence relation on X by setting $x\ y$ if there is a connected subspace of X containing both x and y. The equivalence classes are called the **components** (or the "connected components") of X.

JCT

X

https://mathworld.wolfram.com/JordanCurveTheorem.html