

## Theorem

$$|[0, 1]| = |(0, 1)|.$$

- Stands to reason ... the set on the left only has two points the one on the right doesn't....
- But try and write a bijection!

## Proof.

- Call  $A = (0, 1)$ , and  $B = [0, 1]$ .
- Let  $f: A \rightarrow B$  be the identity map  $f(x) = x$ . Clearly injective.
- Let  $g: B \rightarrow A$  be

$$g(x) = \frac{x+1}{3}.$$

Note  $g(0) = 1/3$  and  $g(1) = 2/3$ , and  $g$  is injective.

- By CSB, there is a bijection  $h: A \rightarrow B$  and  $|A| = |B|$ .

