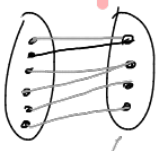
1. Read Chapter 0. (start 0.3)
   - Review of abstract math

2. Wednesday: Be prepared to discuss
   (1) Arbitrary Union : Finite vs. Infinite
   (2) Equivalence Relation : R.
                              S.
                              T.

   (3) Surjective, Injective

onto



Input Output

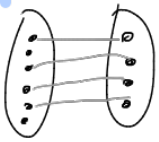
everything in target is hit

Let $f: A \to B$

$\forall b \in B, \exists a \in A$ s.t.

$f(a) = b$

1-1



Input Output

Let $f: A \to B$

If $f(a_1) = f(a_2)$ then $a_1 = a_2$

(4) Preimage: the preimage of some $b \in B$ is all the various points of A that are pushed to b.

$$f^{-1}(b) = \{a \in A \mid f(a) = b\}$$

Ex $f(x) = x^2$

$f^{-1}(4) = \{2, -2\}$

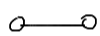
what is topology?

- rubber sheet geometry
- properties of a space that unchanged by {bending, stretching, twisting}
- Involves the 3 C's
  - Continuity
  - Compactness
  - Connectedness

Ex:

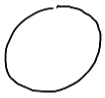
1-D

$[-1,1]$


$(-1,1)$


$[-1,1)$


knot


circle

$y = \sin(\frac{1}{x})$

2-D