

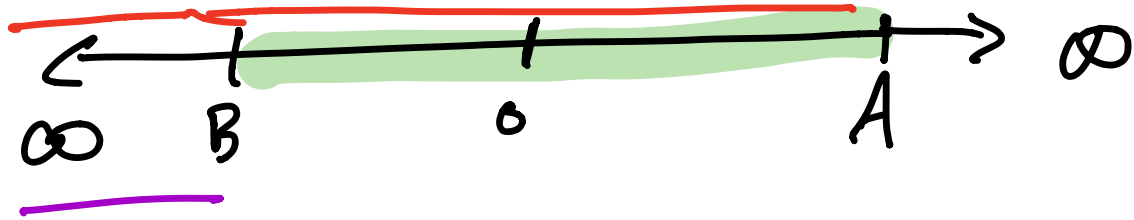
$$3 - 2 = ?$$

$$3.2 - 2.2 = ?$$

$$7 - \square = ? \quad \text{Not well formed}$$

$$3.2 - \frac{4}{3} =$$

real number      real number



$$A - B = \text{shaded region}$$

↑  
number  
on number line

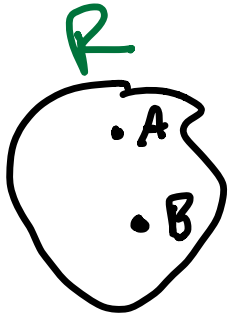
~~$$A - \square = \square ?$$~~

Not well  
formed

$R \xrightarrow{\quad} R$

operation

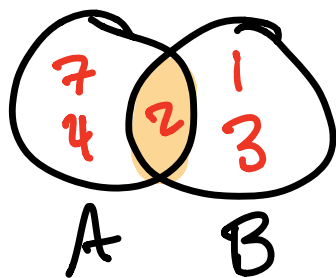
$R = \text{Real \#}$



same type

Subtract(A: real, B: real)  
return  $A - B$

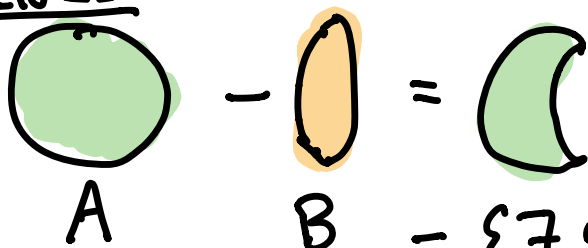
Subtract(3.4,  $\square$ )



$$A - B =$$

Annotations: "type Set" with arrows pointing to A and B, and "operation" with an arrow pointing to the minus sign.

In pictures



$$= \{7, 4\}$$

In numbers

$$A = \{7, 4, 2\}$$

$$B = \{1, 2, 3\}$$

$$A - B = \{7, 4\}$$

$$f: \underline{A: \text{set}} \times \underline{B: \text{set}} \rightarrow \underline{C: \text{set}}$$

Set minus

operation:

a function that  
takes 2 inputs of the same type  
and returns some output  
of some type

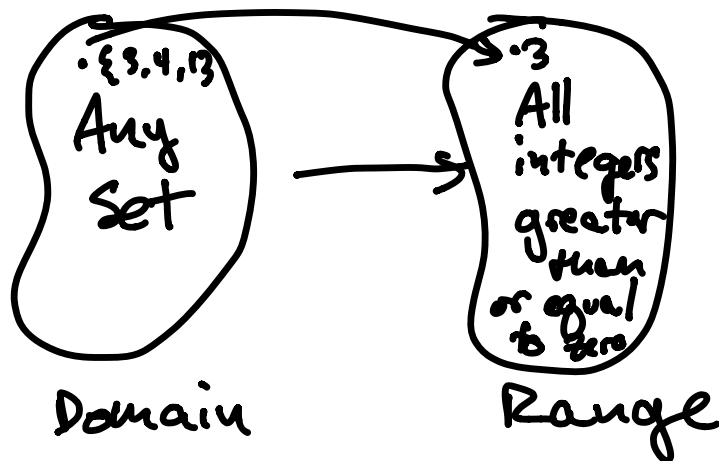
$A = \text{Some set}$

$|A|$

What is the set  
of possible values  
of  $|A|$ ?

$|A| = \text{Some integer}$   
greater than  
or equal to  
than 0

Cardinality is a function that maps a set to some positive integer (or zero)



"horse"  $\notin$  domain so  $| \text{"horse"} |$  is undefined

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