# CS 2050 Class Notes for 2018-09-19

Rafael A. Okiishi Paulucci

## 1 Sections 2.1 and 2.2

$\{\} = \emptyset$
So $/\{\{\}, \emptyset, \{\{\}\}\}/ = 2$

**Power Set**
$\mathbb{P}(S)$ is the set of all subsets of $S$.
$S = \{\}$, $\mathbb{P}(S) = \{\{\}\}$
$S = \{1\}$, $\mathbb{P}(S) = \{\{\}, \{1\}\}$
$S = \{1, 2\}$, $\mathbb{P}(S) = \{\{\}, \{1\}, \{2\}, \{1, 2\}\}$
...
$/\mathbb{P}(S)/ = 2^{/S/}$ (bars are notation for set cardinality)

$A \times B = \{(a, b) \mid a \in A \wedge b \in B\}$ (ordered 2-tuple)
$A \times B \times C = \{(a, b, c) \mid a \in A \wedge b \in B \wedge c \in C\}$ (ordered 3-tuple)
$A \cup B\{x \mid x \in A \vee x \in B\}$
$B - A = \{x \mid x \in B \wedge x \notin A\}$
$\bar{A} = U - A$ (complement of A) ($U$ is a hypothetical universal set in a given context)
$\bar{A} = \{x \mid x \in U \wedge x \notin A\}$