0.1 Cardinality

0.1.1 Cardinality of cartesian product

What about the cardinality of Cartesian products? So if we have sets:

$\{1, 2, 3\}$

$\{a, b\}$

We can have the Cartesian product set:

$\{(1, a), (2, a), (3, a), (1, b), (2, b), (3, b)\}$

We can see that:

$|A.B| = |A|.|B|$

0.1.2 Cardinality of union and intersection

$|A \vee B| = |A| + |B| - |A \wedge B|$

0.1.3 Cardinality of powerset

$|P(s)| = 2^{|s|}$

0.1.4 Cardinality of complement

$|a \setminus b| = |a| - |a \wedge b|$

0.1.5 Cardinality of even/odd natural numbers

What about the cardinality of even numbers? Well, we can define a bijective function between each:

$f(n) = 2n$

Similarly for odd numbers:

$f(n) = 2n + 1$

So these both have cardinality $\aleph_0$.