**Boolean Algebra Stuff**

First up, I guess I’ll discuss some definitions of sets. And ultimately, I want to see if we can make formal deductions from a set of statements.

**Sets**

Making some definitions.



For instance,



Then we can say:



which is true, and one can work out higher analogues. Suppose we want only the part of A that doesn’t intersect with anything else. Then that would be:



Suppose you want the parts of A, B, and C that don’t intersect with anything else. Then this is:



**Logic**

Can also reduce logical arguments to math. In that case we need identity…



And also, A and B would be assigned truth values 0 or 1. Additionally, U would be assigned value of 1. Then for instance,



Might translate as…



And writing this out mathematically we’d have:



and the second says,



Plugging this last into the first we have:



which implies that B must be true, implicitly. Perhaps another way, more succinct would be to start with second:



Then filling this into the first we’d have:



Got some other identities:



**Probabilistic logic**

Suppose we relax the restriction of the sets to values of 0 or 1, but allow numbers inbetween. For instance, we could then write P(B|A) = 0.7 as:



this would be read as ‘the probability of A and not-B is equal to 0.3’. And this is true. What about more complicated arguments? Hmmm. There is identity P(B/A) = P(AB)/P(A). Can this be derived?

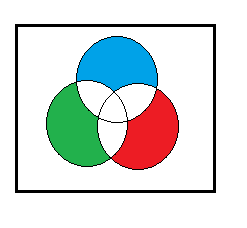


Could also say,



Baye’s theorem:







To make more concrete, how would one evaluate following argument,



Well…



and then,

