

Refutation of the abc conjecture

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The abc conjecture is described at wiki. Basically it says for the relatively prime numbers of p,q,s the expression $p+q=s$ is true. If the conjecture is refuted, then it cannot be used as the proof for a multitude of other unrefuted conjectures.

Using propositional logic in Meth8, LET

p,q,s integers
 r relatively prime
 & And;
 + Or;
 > Imply;
 = Equivalent to.

In less words: "If $p+q=s$ and that p,q,s are relatively prime, then $p+q$ is true."

This effectively defines s and asserts p,q,s are relatively prime to prove $p+q$ is true.

$((p+q)=s) \& (((p \& q) \& s)=r) > (p+q)$; Not validated; this deviates by only one value from true, in bold.

In more words: "If p or q is equivalent to s and p,q,s are relatively prime, then p or q is true."

Truth tables are row major for all four rows; the designated truth values are True and Evaluated.

| Model 1 | Model 2.1 | Model 2.2 | Model 2.3.1 | Model 2.3.2 |
|------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| p | | | | |
| FTFT FTFT FTFT FTFT | UEUE UEUE UEUE UEUE | UEUE UEUE UEUE UEUE | UEUE UEUE UEUE UEUE | UEUE UEUE UEUE UEUE |
| q | | | | |
| FFTT FFTT FFTT FFTT | UUEE UUEE UUEE UUEE | UUEE UUEE UUEE UUEE | UUEE UUEE UUEE UUEE | UUEE UUEE UUEE UUEE |
| (p+q) | | | | |
| FTTT FTTT FTTT FTTT | UEEE UEEE UEEE UEEE | UEEE UEEE UEEE UEEE | UEEE UEEE UEEE UEEE | UEEE UEEE UEEE UEEE |
| (p&q) | | | | |
| FFFT FFFT FFFT FFFT | UUUE UUUE UUUE UUUE | UUUE UUUE UUUE UUUE | UUUE UUUE UUUE UUUE | UUUE UUUE UUUE UUUE |
| s | | | | |
| FFFF FFFF TTTT TTTT | UUUU UUUU EEEE EEEE | UUUU UUUU EEEE EEEE | UUUU UUUU EEEE EEEE | UUUU UUUU EEEE EEEE |
| ((p&q) & s) | | | | |
| FFFF FFFF FFFT FFFT | UUUU UUUU UUUE UUUE | UUUU UUUU UUUE UUUE | UUUU UUUU UUUE UUUE | UUUU UUUU UUUE UUUE |
| r | | | | |
| FFFF TTTT FFFF TTTT | UUUU EEEE UUUU EEEE | UUUU EEEE UUUU EEEE | UUUU EEEE UUUU EEEE | UUUU EEEE UUUU EEEE |
| ((p+q)=s) | | | | |
| TFFF TFFF FTTF FTTF | EUUU EUUU UEEE UEEE | EUUU EUUU UEEE UEEE | EUUU EUUU UEEE UEEE | EUUU EUUU UEEE UEEE |
| ((p&q) & s)=r) | | | | |
| TTTT FFFF TTTF FFFT | EEEE UUUU EEEU UUUE | EEEE UUUU EEEU UUUE | EEEE UUUU EEEU UUUE | EEEE UUUU EEEU UUUE |
| ((p+q)=s) & ((p&q) & s)=r) | | | | |
| TFFF FFFF FTTF FFFT | EUUU UUUU UEEU UUUE | EUUU UUUU UEEU UUUE | EUUU UUUU UEEU UUUE | EUUU UUUU UEEU UUUE |
| ((p+q)=s) & ((p&q) & s)=r) > (p+q) | | | | |
| FTTT TTTT TTTT TTTT | UEEE EEEE EEEE EEEE | UEEE EEEE EEEE EEEE | UEEE EEEE EEEE EEEE | UEEE EEEE EEEE EEEE |
| Model 1 | Model 2.1 | Model 2.2 | Model 2.3.1 | Model 2.3.2 |

This proof is an example of using the simplicity of propositional logic to map numerical expressions in arithmetic. It is the fine grained detail of the VL4 logic system of Meth8 that makes this view possible.