|  |  |  |  |
| --- | --- | --- | --- |
| 1a | 0 \* 0 = 0 | 1b | 1 + 1 = 1 |
| 2a | 1 \* 1 = 1 | 2b | 0 + 0 = 0 |
| 3a | 0 \* 1 = 1 \* 0 = 0 | 3b | 1 + 0 = 0 + 1 = 1 |
| 4a | If x = 0 then x’ = 1 | 4b | If x = 1 then x’ = 0 |

Axioms of Boolean Algebra

|  |  |  |  |
| --- | --- | --- | --- |
| 5a | x\* 0 = 0 | 5b  | x + 1 = 1 |
| 6a | x\* 1 = x | 6b | x + 0 = x |
| 7a | x \* x = x | 7b | x+ x = x |
| 8a | x\* x’ = 0 | 8b | x + x’ = 1 |
| 9a | x’’ = x |  |  |

Single Variable Theorems

Two- and Three-Variable Properties

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 10a | x\*y = y\*x | 10b | x+y = y+x | Commutative |
| 11a | x \* (y \* z) = (x \* y) \* z  | 11b | x + (y + z) = (x + y) + z | Associative |
| 12a | x\*(y+z) = x\*y + x\*z | 12b | x + (y\*z) = (x+y) \* (x+z) | Distributive |
| 13a | x + x\*y = x | 13b | x\*(x+y) = x | Absorption |
| 14a | x\*y+x\*y’ = x | 14b | (x+y)\*(x+y’) =x | Combining |
| 15a | (x\*y)’ = x’ + y’ | 15b | (x+y)’ = x’\*y’ | DeMorgan’s Theorem |
| 16a | x+(x’ \* y) = x + y | 16b | x\*(x’+y) = x \* y |  |
| 17a | x\*y + y\*z +x’\*z = x \* y + x’\*z | 17b | (x+y)\*(y+z)\*(x’+z) = (x+y) \* (x’+z) | Consensus |