LAWS AND THEOREMS OF BOOLEAN ALGEBRA

Distributive laws:

$X(Y + Z) = XY + XZ$ $\qquad$ $X + YZ = (X + Y)(X + Z)$

Simplification theorems:

$XY + XY' = X$ $\qquad$ $(X + Y)(X + Y') = X$

$X + XY = X$ $\qquad$ $X(X + Y) = X$

$(X + Y')Y = XY$ $\qquad$ $XY' + Y = X + Y$

Multiplying out and Factoring:

$(X + Y)(X' + Z) = XZ + X'Y$ $\qquad$ $XY + X'Z = (X + Z)(X' + Y)$

Consensus theorem:

$XY + YZ + X'Z = XY + X'Z$ $\qquad$ $(X + Y)(Y + Z)(X' + Z) = (X + Y)(X' + Z)$

Exclusive Or and Equivalence:

$X \oplus Y = X'Y + XY'$ $\qquad$ $X \equiv Y = XY + X'Y'$

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