Boolean Algebra Theorems

Theorem 1 $X + XY = X$

Theorem 2 $X + X'Y = X + Y$

Theorem 3 $XY + X'Z + YZ = XY + X'Z$

Theorem 4 $X(X + Y) = X$

Theorem 5 $X(X' + Y) = XY$

Theorem 6 $(X + Y)(X + Y') = X$

Theorem 7 $(X + Y)(X' + Z) = XZ + X'Y$

Theorem 8 $(X + Y)(X' + Z)(Y + Z) = (X + Y)(X' + Z)$

DeMorgan's Theorems

1. Complement entire Expression

2. Complement each Term

3. Change operation from AND to OR or OR to AND

Theorem 9 $(XYZ)' = X' + Y' + Z'$

Theorem 10 $(X + Y + Z)' = X'Y'Z'$