

### Basic Identities of Boolean Algebra

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$$X + 0 = X$$

$$X + 1 = 1$$

$$X + X = X$$

$$X + \bar{X} = 1$$

$$\overline{\bar{X}} = X$$

$$X \cdot 1 = X$$

$$X \cdot 0 = 0$$

$$X \cdot X = X$$

$$X \cdot \bar{X} = 0$$

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$$X + Y = Y + X$$

Commutative

$$X + (Y + Z) = (X + Y) + Z$$

Associative

$$X(Y + Z) = XY + XZ$$

Distributive

$$\overline{X + Y} = \bar{X} \cdot \bar{Y}$$

DeMorgan's

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$$XY = YX$$

Commutative

$$X(YZ) = (XY)Z$$

Associative

$$X + YZ = (X + Y)(X + Z)$$

Distributive

$$\overline{X \cdot Y} = \bar{X} + \bar{Y}$$

DeMorgan's

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