

$(-b) \rightarrow$ Two's Complement

$$b = 00000110$$

$$-b = 11111001$$

$$+1 \leftarrow \text{Add 1}$$

$$\underline{\underline{11111010}}$$

$$(x+y)(x+z)$$

$$x(x+z) + y(x+z)$$

$$xx + xz + xy + yz$$

$$x + xz + xy + yz$$

$$x + xy + yz$$

$$\underline{\underline{x + yz}}$$

Distributive Law

Distributive Law

Idempotent Law

Redundancy Law

Redundancy Law

$$\overline{(\bar{A}B)} + B$$

$$\overline{(\bar{A}B)} \cdot \bar{B}$$

$$\bar{A} + \bar{B} \cdot \bar{B}$$

$$A + \bar{B} \cdot \bar{B}$$

$$A\bar{B} + \bar{B}\bar{B}$$

$$A\bar{B} + \bar{B}$$

$$\bar{B}(A+1)$$

$$\bar{B} \cdot 1$$

$$\bar{B} \cdot (A + \bar{A})$$

$$\bar{B}A + \bar{B}\bar{A}$$

$$\underline{\underline{A\bar{B} + \bar{A}\bar{B}}}$$

De Morgan's Law

De Morgan's Law

Double Complement Law

Distributive Law

Idempotent Law

Distributive Law

Identity Law

$$\boxed{A + \bar{A} = 1}$$

Distributive Law

Commutative Law

$$\begin{aligned}
 & x + xz + xy + yz \\
 & \quad x + xy + yz \\
 & \quad \underline{\underline{x + yz}}
 \end{aligned}$$

Distributive Law

Idempotent Law

Redundancy Law

Redundancy Law

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$$\overline{(\bar{A}B)} \cdot \bar{B}$$

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$$A\bar{B} + \bar{B}\bar{B}$$

$$A\bar{B} + \bar{B}$$

$$\bar{B}(A + 1)$$

$$\bar{B} \cdot 1$$

$$\bar{B} \cdot (A + \bar{A})$$

$$\bar{B}A + \bar{B}\bar{A}$$

$$\underline{\underline{A\bar{B} + \bar{A}\bar{B}}}$$

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

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$$(x+y)(x+z)$$

$$x(x+z) + y(x+z)$$

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$$\overline{(\bar{A}B) + B}$$

$$\overline{(\bar{A}B)} \cdot \bar{B}$$

$$\bar{A} + \bar{B} \cdot \bar{B}$$

$$A + \bar{B} \cdot \bar{B}$$

$$A\bar{B} + \bar{B}\bar{B}$$

$$A\bar{B} + \bar{B}$$

$$\bar{B}(A + 1)$$

$$\bar{B} \cdot 1$$

$$\bar{B} \cdot (A + \bar{A})$$

$$\bar{B}A + \bar{B}\bar{A}$$

$$\underline{\underline{A\bar{B} + \bar{A}\bar{B}}}$$

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Identity Law

$$\boxed{A + \bar{A} = 1}$$

Distributive Law

Commutative Law

$(-b) \rightarrow$ Two's Complement

$$b = 00000110$$

$$-b = 11111001 \quad \text{Invert all}$$

$$\begin{array}{r} 11111001 \\ + 1 \\ \hline 11111010 \end{array} \quad \text{Add 1}$$

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

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

$$XX + XZ + XY + YZ$$

$$X + XZ + XY + YZ$$

$$X + XY + YZ$$

$$\underline{\underline{X + YZ}}$$

Distributive Law

Distributive Law

Idempotent Law

Redundancy Law

Redundancy Law

$$\overline{(\bar{A}B)} + B$$

$$\overline{(\bar{A}B)} \cdot \bar{B}$$

$$\bar{A} + \bar{B} \cdot \bar{B}$$

$$A + \bar{B} \cdot \bar{B}$$

De Morgan's Law

De Morgan's Law

Double Complement Law

Distributive Law