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Boolean Identities Practice

$$1. x(\bar{x} + y) = x\bar{x} + xy = x0 + xy = xy$$

$$2. xy + \bar{x}y = y(x + \bar{x}) = y(1) = y$$

$$3. (\bar{x} + \bar{y})(\bar{x} + y)$$

$$= \bar{x}\bar{y}(\bar{x} + y)$$

$$= \bar{x}\bar{x}\bar{y} + \bar{x}y\bar{y}$$

$$= \bar{x}\bar{y} + x0$$

$$= \bar{x}\bar{y}$$

$$4. \bar{x} + y\bar{x}$$

$$= (\bar{x} + y)(\bar{x} + \bar{x})$$

$$= \bar{x} \text{ (absorption)}$$

$$= \bar{x}$$

$$= \bar{x}$$

$$5. (w + \bar{x} + y + \bar{z})\bar{y} + \bar{y}A$$

$$= \bar{y} \text{ (absorption)}$$

$$6. x\bar{x}(x + (xy))A$$

$$= x0 \text{ (absorption)}$$

$$7. \overline{(x + \bar{x})}$$

$$= \overline{(1)}$$

$$= 0$$

$$8. \overline{(\bar{x} + \bar{x})}$$

$$= \overline{(\bar{x})}$$

$$= x$$

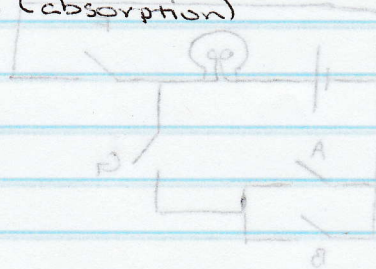
$$9. w + (w\bar{x}yz)$$

$$= w \text{ (absorption)}$$

$$10. \bar{w}(\bar{w}xyz)$$

$$= \bar{w}(\bar{w} + \bar{x} + \bar{y} + \bar{z})$$

$$= \bar{w} \text{ (absorption)}$$



$$(1A + 0)(\bar{0}A + 0)$$

$$= (\bar{0}A + 0)0$$

$$= 0A + 0$$

$$(1 + 0)\bar{A}$$

$$= 1\bar{A} + 0\bar{A}$$

$$= \bar{A} + 0$$

$$= \bar{A}$$