

Exercise 1

a)

$$\begin{aligned} & \bar{a}\bar{b}\bar{c} \\ & + \bar{a}b\bar{c} \\ & + a\bar{b}c \\ & + abc \end{aligned}$$

$$\begin{aligned} &= \bar{a}(\bar{b}\bar{c} + b\bar{c}) \\ &+ a(\bar{b}c + bc) \\ &\equiv \bar{a}\bar{c} + abc + ab\bar{c} \checkmark \end{aligned}$$

ii)

$$\begin{aligned} & \bar{a}\bar{b}c \\ & + ab\bar{c} \\ & + abc \end{aligned}$$

$$\begin{aligned} & (a + b + c) \\ & \cdot (a + \bar{b} + c) \\ & \cdot (a + \bar{b} + \bar{c}) \\ & \cdot (\bar{a} + b + c) \\ & \cdot (\bar{a} + b + \bar{c}) \end{aligned}$$

$$\bar{a} + ab + a\bar{c} + a\bar{b}\bar{c}$$

$$\begin{array}{l} \bar{a}\bar{b}c + a\cancel{b}c + a\bar{c}b + a\bar{b}\bar{c} \\ + \bar{a}bc + abc + a\cancel{c}\bar{b} \end{array}$$

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⑥ ① $\bar{a}c + \bar{a}b\bar{c} + abc$

$$\bar{a}(\bar{b}c + bc + b\bar{c}) + abc$$

$$\equiv \bar{a}\bar{b}c + \bar{a}bc + \bar{a}b\bar{c} + abc$$

$$\equiv \cancel{\bar{a}\bar{b}c} + \cancel{\bar{a}bc} + \bar{a}b\bar{c} + abc$$

$$\begin{array}{c} ab\bar{c} \\ \bar{a}\bar{b}c \\ abc \\ a\bar{b}\bar{c} \end{array}$$

$$\equiv (a+b+c)(\bar{a}+b+\bar{c})(\bar{a}+b+c)(\bar{a}+\bar{b}+c)$$

⑥ ② $\bar{a}\bar{b}\bar{c} + (a+ab)(b+\bar{c})$
 $+ \bar{a}bc \equiv ab + a\bar{c} + \bar{a}b\bar{c}$
 $+ \bar{a}\bar{b}c$
 $+ \bar{a}b\bar{c}$

$$\begin{array}{c} \infty \\ 001 \\ 010 \\ 011 \\ 100 \\ 101 \end{array}$$

$$\equiv \bar{a}\bar{b}c + \bar{a}bc + \bar{a}\bar{b}c + \bar{a}b\bar{c} + abc + ab\bar{c} + a\bar{b}\bar{c}$$

$$\equiv (\bar{a}+b+\bar{c})$$

$$\bar{a} + a(a+b)(b+c)$$

$$\bar{a}\bar{b}c + \bar{a}b\bar{c} + a\bar{b}\bar{c} + abc$$

$$\equiv (a+b+\bar{c})(a+\bar{b}+c)(\bar{a}+b+c)(\bar{a}+\bar{b}+\bar{c})$$

$$\equiv \overline{(a+b+\bar{c})}$$

$$\equiv (\bar{a}\bar{b}c)(\bar{a}b\bar{c})$$

$$\overline{(\bar{a}\bar{b}c)} \overline{(\bar{a}b\bar{c})}$$

$$a = 3$$

$$b =$$

$$c =$$

$$\bar{2}$$

$$\frac{1}{2}$$

$$(ab + cd) + (a + \bar{b})(\bar{c} + d) \quad \text{al: 3}$$

$$\equiv ab + cd + a\bar{c} + ad + \bar{b}\bar{c} + \bar{b}d$$

$$(\bar{a}b)(\bar{c}d)(\dots)($$

\equiv

$$\bar{a}bc + a\bar{b}\bar{c} + ab\bar{c} + abc$$

$$\equiv (\bar{a}bc)(a\bar{b}\bar{c}) + (ab\bar{c}) + (abc)$$

$$\equiv (a + \bar{b} + \bar{c})(\bar{a} + b + c)(\bar{a} + \bar{b} + c) + (\bar{a} + \bar{b} + \bar{c})$$