

① 1

a) $\begin{array}{r|l} 1 & 3 \\ 6 & 1 \\ 3 & 0 \\ 1 & 1 \\ 0 & 1 \end{array}$

$$13_{10} = 1101_2$$

256 128 64 32 16 8 4 2 1

$$\begin{array}{r} 289 \\ 14731 \\ \hline 14731 \end{array}$$

$$289_{10} = 100100001_2$$

c) -27

2	7	
1	3	1
	6	1
	3	0
	1	1
	0	1

$$\begin{array}{cccccc} & 3 & 7 & 16 & 9 & 4 & 2 & 1 \\ 2 & 7 & = & 1 & 1 & 0 & 1 & 1 \end{array}$$

$$-32 + 4 \times 1 = -28$$

0 0 1 0 1

$$\underline{-27 = 100101}$$

	1	0	0	1	0	1
-33				4		1

Ques 2

a) 1 00 1 0 1

32 4 1

37.0

6) 1 1 0 1 1 1 1 0 1 1

512 256 64 32 16 8 2 1

891.0

Q4/3

a) 11000110

-128 64 4 2

-128 + 64 + 4 + 2

-64 + 4 + 2

-58₁₀

b) 101011001

-256 64 16 8 1

-256 + 64 + 16 + 8 + 1

-192 + 16 + 8 + 1

-176 + 8 + 1

-168 + 1

-167₁₀

Q4/4)

0001011001010

+0111101000111

01001000010001

Q4/6

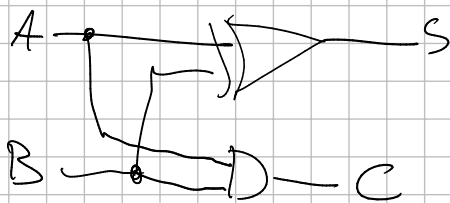
a	b	c	d
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

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a	b	c	s
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

$$(\bar{a}b) + (a\bar{b}) = s$$

$$ab = c$$

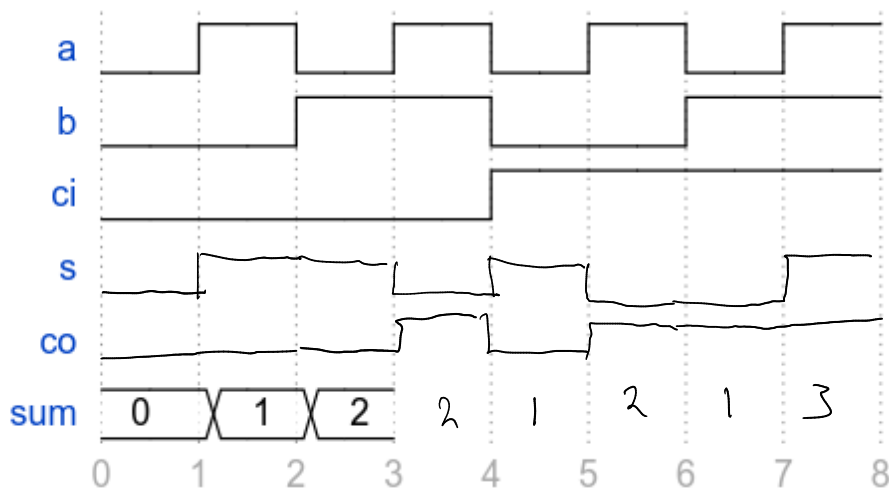


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a	b	c	s
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

13

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a	b	c _i	c _o	s
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	0	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1

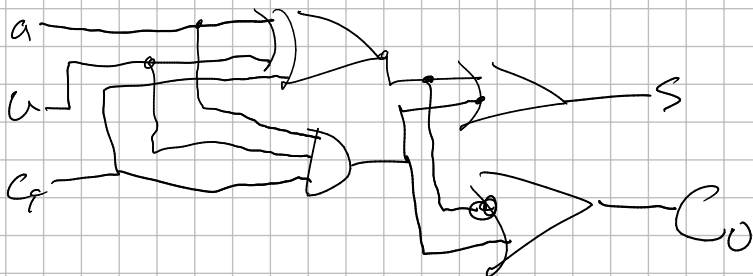
$$s = \bar{a} \bar{b} c_i + \bar{a} b \bar{c}_i + \bar{a} b c_i + a \bar{b} \bar{c}_i$$

$$c_o = \bar{a} b c_i + a \bar{b} c_i + a b \bar{c}_i + a b c_i$$

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$$s = \bar{a} \bar{b} c_i + \bar{a} b \bar{c}_i + \bar{a} b c_i + a \bar{b} \bar{c}_i \quad \text{XOR} + \text{AND}$$

$$c_o = \bar{a} b c_i + a \bar{b} c_i + a b \bar{c}_i + a b c_i \quad \text{NOR} + \text{AND}$$



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