

Задача 1. Демо-2018

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$$(\neg x_1 \vee y_1) \rightarrow (\neg x_2 \wedge y_2) = 1$$

$$(\neg x_2 \vee y_2) \rightarrow (\neg x_3 \wedge y_3) = 1$$

...

$$(\neg x_6 \vee y_6) \rightarrow (\neg x_7 \wedge y_7) = 1$$

X1	Y1	X2	Y2
0	0	0	1
	1	0	1
1	0	0	0
	1	1	1

X2Y2 X1Y1
 00 = 10
 01 = 00+01+10+11
 10 = 10
 11 = 10

	X1Y1	X2Y2	X3Y3	X4Y4	X5Y5	X6Y6	X7Y7
00	1	1	1	1	1	1	1
01	1	4	7	10	13	16	19
10	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1

Задача 2

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$$(x_1 \wedge y_1) \equiv (\neg x_2 \vee \neg y_2)$$

$$(x_2 \wedge y_2) \equiv (\neg x_3 \vee \neg y_3)$$

...

$$(x_5 \wedge y_5) \equiv (\neg x_6 \vee \neg y_6)$$

X1	Y1	X2	Y2
0	0		
		1	1
	1		
		1	1
1	0		
		1	1
	1		
		0	0

0

X2Y2 X1Y1
 00 = 11
 01 = 11
 10 = 11
 11 = 00+01+10

	X1Y1	X2Y2	X3Y3	X4Y4	X5Y5	X6Y6
00	1	1	3	3	9	9
01	1	1	3	3	9	9
10	1	1	3	3	9	9
11	1	3	3	9	9	27

Задача 3

$$(\neg x_1 \vee y_1) \neq (\neg x_2 \wedge \neg y_2)$$

$$(\neg x_2 \vee y_2) \neq (\neg x_3 \wedge \neg y_3)$$

...

$$(\neg x_5 \vee y_5) \neq (\neg x_6 \wedge \neg y_6)$$

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X1	Y1	X2	Y2
0	0	0	1
		1	0 1
	1	0	1
		1	0 1
1	0	0	0
		1	0 1
	1	0	1
		1	0 1

X2Y2 X1Y1
 00 = 10
 01 = 00+01+11
 10 = 00+01+11
 11 = 00+01+11

1

1

0

	X1Y1	X2Y2	X3Y3	X4Y4	X5Y5	X6Y6
00	1	1	3	7	17	41
01	1	3	7	17	41	99
10	1	3	7	17	41	99
11	1	3	7	17	41	99

Задача 5

$$(x_1 \neq \neg y_1) \equiv (x_2 \rightarrow y_2)$$

$$(x_2 \neq \neg y_2) \equiv (x_3 \rightarrow y_3)$$

...

$$(x_6 \neq \neg y_6) \equiv (x_7 \rightarrow y_7)$$

256

	Y1	X2	Y2
0	0	0	0 — 1
		1	— 1
	1		—
		1	— 0
1	0		—
		1	— 0
	1	0	0 — 1
		1	— 1

X2Y2	X1Y1
00 =	00+11
01 =	00+11
10 =	01+10
11 =	00+11

	X1Y1	X2Y2	X3Y3	X4Y4	X5Y5	X6Y6	X7Y7
00	1	2	4	8	16	32	64
01	1	2	4	8	16	32	64
10	1	2	4	8	16	32	64
11	1	2	4	8	16	32	64

Задача 7

$$\begin{aligned}
 (x_1 \rightarrow (x_2 \wedge y_2)) \wedge (y_1 \rightarrow y_2) &= \mathbf{1} & 53 \\
 (x_2 \rightarrow (x_3 \wedge y_3)) \wedge (y_2 \rightarrow y_3) &= \mathbf{1} \\
 &\dots \\
 (x_7 \rightarrow (x_8 \wedge y_8)) \wedge (y_7 \rightarrow y_8) &= \mathbf{1}
 \end{aligned}$$

	X1	Y1	X2	Y2	
0		0	0	0	
		0	1	1	
		1	0	0	
		1	1	1	
1		0	0	1	
		0	1	1	
		1	0	0	
		1	1	1	

X2Y2 X1Y1

00 = 00

01 = 00+01

10 = 00

11 = 00+01+10+11

	X1Y1	X2Y2	X3Y3	X4Y4	X5Y5	X6Y6	X7Y7	
00	1	1	1	1	1	1	1	1
01	1	2	3	4	5	6	7	8
10	1	1	1	1	1	1	1	1
11	1	4	8	13	19	26	34	43

Задача 8

1013

$$\begin{aligned}
 (x_1 \rightarrow (x_2 \vee y_2)) \wedge (y_1 \rightarrow y_2) &= \mathbf{1} \\
 (x_2 \rightarrow (x_3 \vee y_3)) \wedge (y_2 \rightarrow y_3) &= \mathbf{1} \\
 &\dots \\
 (x_7 \rightarrow (x_8 \vee y_8)) \wedge (y_7 \rightarrow y_8) &= \mathbf{1}
 \end{aligned}$$

X1	Y1	X2	Y2
0	0	0	0 — 1
		1	0 — 1
	1	0	— 1
		1	— 1
1	0	0	— 1
		1	0 — 1
	1	0	— 1
		1	— 1

X2Y2 X1Y1
 00 = 00
 01 = 00+01+10+11
 10 = 00+10
 11 = 00+01+10+11

	X1Y1	X2Y2	X3Y3	X4Y4	X5Y5	X6Y6	X7Y7	X8Y8
00	1	1	1	1	1	1	1	1
01	1	4	11	26	57	120	247	502
10	1	2	3	4	5	6	7	8
11	1	4	11	26	57	120	247	502