

7

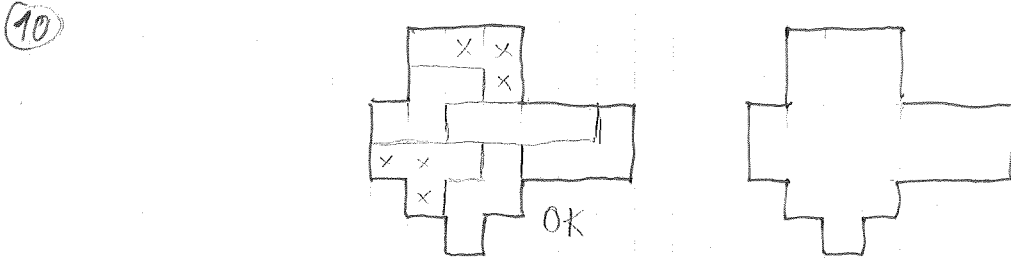
0	1	0	2	1	0
1	2	0	2	1	0
	0	1		0	1
				0	1

	x	x	x		
1	0	1	0	1	0

8) T, 1 --- 23 T
 5 25 25 → 15
 10 20

9)

16
25 27
36
49
64
81



11)

$$1 + 23 + 456 \quad 381 = 356 + 24 + 1 \leftarrow$$

$$1 + 24 + 356 \quad \downarrow$$

$$381 - 345 = 36 \quad 372 = 356 + \begin{cases} 12 + 4 \\ 14 + 2 \end{cases}$$

$$291 = 256 + 34 + \textcircled{1} \leftarrow$$
~~$$245 + 3 +$$~~
~~$$246 + +$$~~

$$234 + 56 + 1$$

$$273 = 256 + 13 + 4$$

$$256 + 14 + 3$$
~~$$234 +$$~~

$$192 - 34 = 158 = 156 + 2$$

12

123 → P

1 → 3 → P

12 → P

2 → 3 → P

23 → G

3 → 2 → P

34 → P

4 → 123 → P

5 → 123 → P

13

0 → 1: 4 ← 4^e

1 → 2: 5

2 → 3: 2

3 → 4: 3

4 → 5: 3

5 → 6: 1

6 → 7: 5

7 → 8: 4 ← 1^{er}

8 → 9: 1 ← 2^e

9 → 0: 2 ← 3^e

09:59 → 10:00 en...

~~59~~ 59 → 00: 3 + 2 = 5
9 → 0: 2 reste 4 pour 0 → 1

~~23~~ 23 → 00: 3 + 3 = 6.

10:02 ou 00:02

14) a et b

$(a+b)(a+b-1)$

$\frac{n(n-1)}{2}$ $\frac{b(b-1)}{2}$

1	3	6	10	15	21	28	36	45	55	66	78	91	105	120
136	153	171	190	210	231	253	276	300						

6 → n=4
210 → n=21

15)

- 1 → 1
- 2 → 1
- 3 → 231 → 31 → 13 → 3
- 4 → 2341 → ~~1341~~ 341 → 13 → 1
- 5 → 12345 → 135 → 35 → 3
- 6 → 135 → 5
- 7 → 1357 → 37 → 7

- 1 → 1
- 2 → 3
- 3 → 5

$f(2n) = 2f(n) - 1$

$f(2n+1) =$

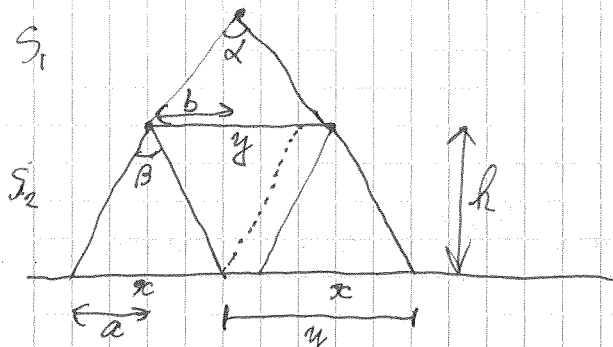
24 → 135...23
→ 153...21

- 8 → 1357 → 15 → 1
- 9 → 91357 → 3
- 10 → 13579 → 5

~~2^n + 17 - 1~~ $2^n + \frac{17-1}{2} = 2^n + 8$

- n=4 → 24
- n=5 → 40
- n=6 → 72

16



$$h = \cos(\beta/2)$$

$$a = \sin(\beta/2)$$

SA/SB/SB/SB $S_2 = \frac{xh}{2} + yh = h\left(\frac{x}{2} + y\right)$

$$h^2 + \left(\frac{x}{2}\right)^2 = 1$$

SA/SB/SB/SB $\alpha(\alpha)$

$$S = \sqrt{1-a^2}(a+2b) + b\sqrt{1-b^2}$$

SA/SB/SB/SB

$$S = \frac{\sin \alpha}{2} + \frac{\sin \beta}{2} + 2 \cos(\beta/2) \cdot \sin(\alpha/2)$$

$$\frac{dS}{d\alpha} = \frac{\cos \alpha}{2} + \cos(\beta/2) \cdot \cos(\alpha/2)$$

$$\frac{dS}{d\beta} = \frac{\cos \beta}{2} - \sin(\alpha/2) \cdot \sin(\beta/2)$$

$$\frac{dS}{da} = \frac{-2a}{2\sqrt{1-a^2}}(a+2b) + \sqrt{1-a^2}$$

$$= \frac{1-2a^2-2ab}{\sqrt{1-a^2}}$$

$$1-2a^2-2ab=0$$

$$\frac{dS}{db} = 2\sqrt{1-a^2} + \frac{1-2b^2}{\sqrt{1-b^2}}$$

$$= 2\sqrt{1-a^2} + \frac{3-1/(4a^2)-a^2}{\sqrt{2-1/(4a^2)-a^2}}$$

$$b = \frac{1-2a^2}{2a} = \frac{1}{2a} - a$$

$$b^2 = \frac{1}{4a^2} - 1 + a^2$$

$$A = a^2$$

$$2(1-A) =$$

$$\cos^2 \alpha' - \frac{1}{2} + \cos \alpha' \cdot \cos \beta' = 0$$

$$\cos \beta' = \frac{1/2 - \cos^2 \alpha'}{\cos \alpha'} \quad \cos^2 \alpha' = x$$

$$\cos^2 \beta' - \frac{1}{2} - \sin \alpha' \cdot \sin \beta' = 0$$

$$\begin{aligned} \cos^2 \beta' &= \frac{1}{4 \cos^2 \alpha'} - 1 + \cos^2 \alpha' \\ &= \frac{1}{4x} - 1 + x \end{aligned}$$

$$\left(\frac{1}{4x} - 1 + x - \frac{1}{2} \right)^2 = (1-x) \left(2 - \frac{1}{4x} - x \right)$$

$$\frac{1}{16x^2} + \frac{1}{4} + x^2 + \frac{1}{2} - \frac{3}{4x} = 3x$$

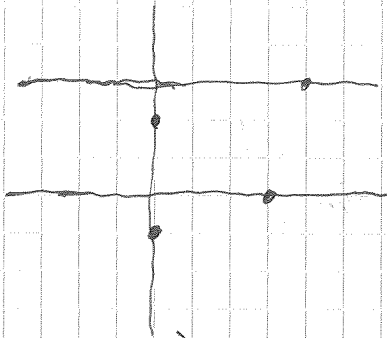
$$= \frac{1}{4x} + 2 + \frac{1}{4} = 3x + x^2$$

$$\frac{1}{2} - \frac{1}{x} + \frac{1}{16x^2} = 0$$

$$x^2 - 2x + \frac{1}{8} = 0$$

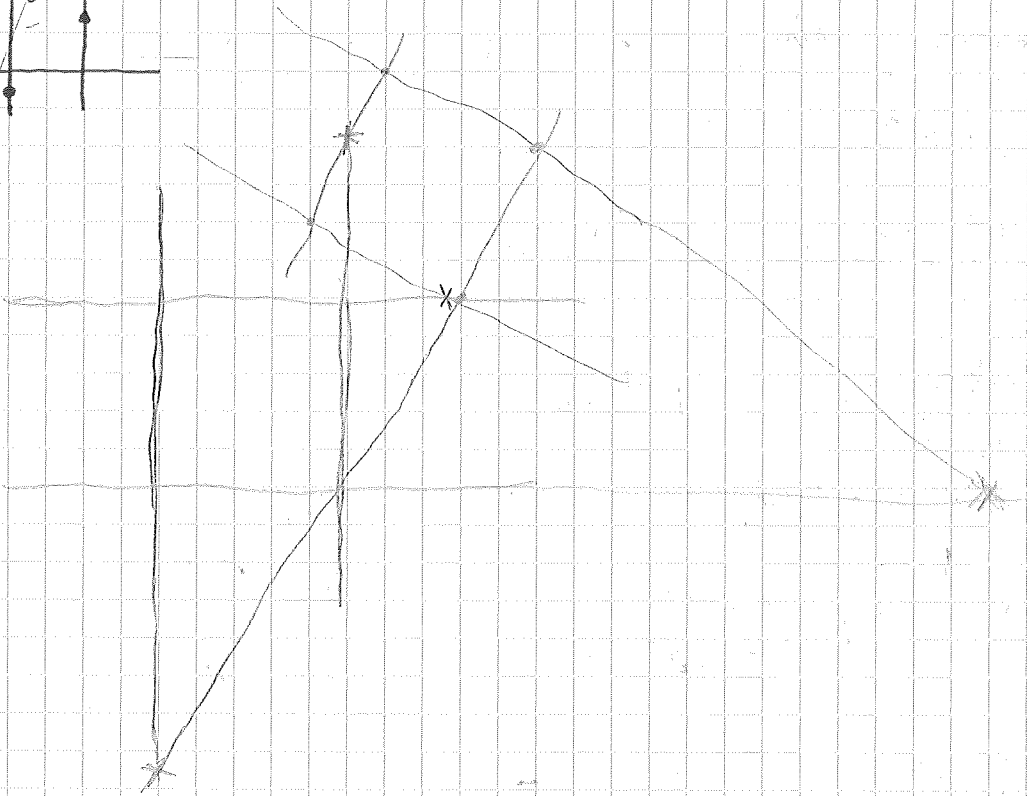
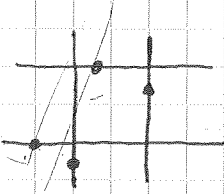
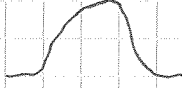
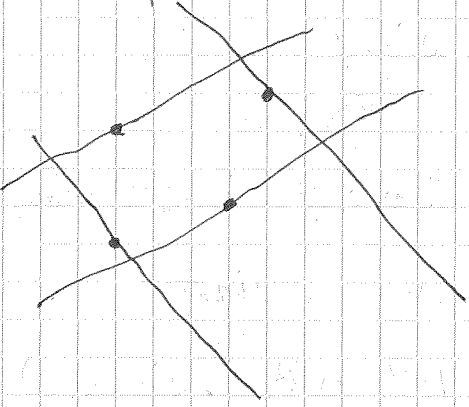
$$x = -1 \pm \sqrt{1 - \frac{1}{8}}$$

(18) Pas d'align. de 3 pts, pas de //



→ 2 carrés.

→ au total: $\frac{4 \times 3}{2} \times 2 = 12$ carrés.



714