$\underline{R}$ = Oba sedí ve stejné řadě
a Y nalevo od X

S = X a Y nesedí ani ve stejné řadě
ani ve stejném sloupci

$\underline{S \circ R}$

$(A,B) \in S \circ R \Leftrightarrow \exists C : \underline{(A,C) \in R} \wedge$
$\underline{(\cancel{C}C,B) \in S.}$
X Y

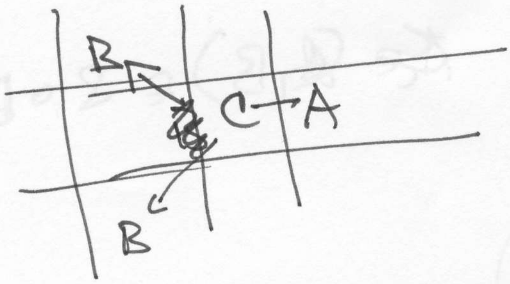
$\Leftrightarrow$

$\exists C$: $\underline{\cancel{X} \text{ a } \cancel{Y} \text{ sedí ve stejné řadě}}$ $\wedge$ (A, C)
C sedí nalevo od A

$\wedge$

$\underline{\text{C a B nesedí ani ve stejné}}$ řadě
ani ve stejném sloupci

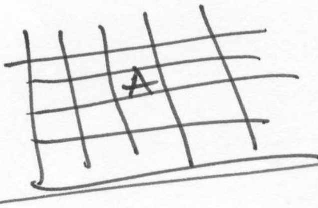
$A, B \in S \circ R$



Reflexivita neplatí (Důkaz spor)

Nechť $(A, A) \in S \circ R$ pak tedy
$\exists C$ tak, že (A, C) sedí ve
stejné řadě $\wedge (C, A)$ nesedí
ve stejné řadě $\Rightarrow$ spor

$(A, A) \in R \wedge (A, A) \in S$

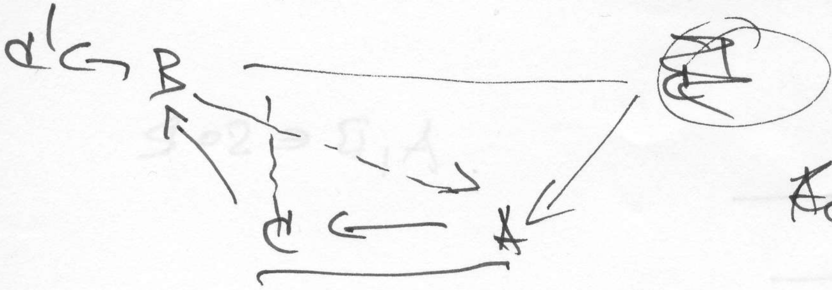


$M = \{A\}$

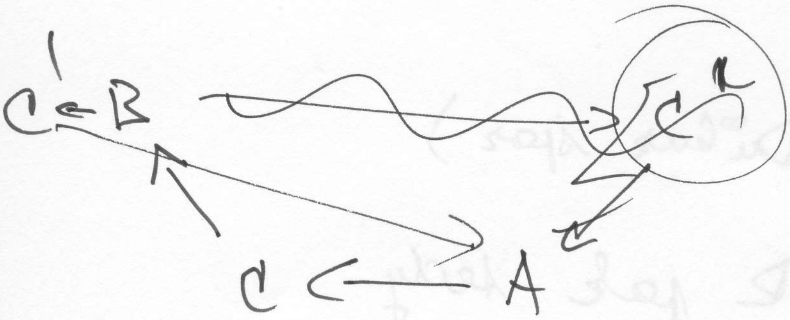
$R = \emptyset$

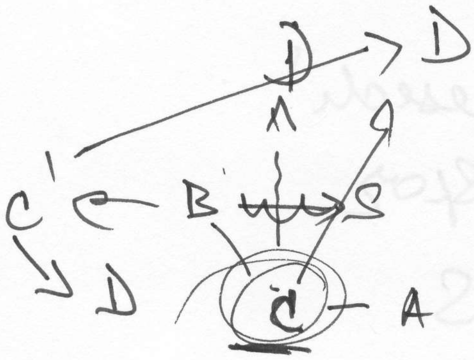
$S = \emptyset$

$S \circ R = \emptyset$



$\cancel{A}\cancel{c}\,(A,B) \in S \circ R$





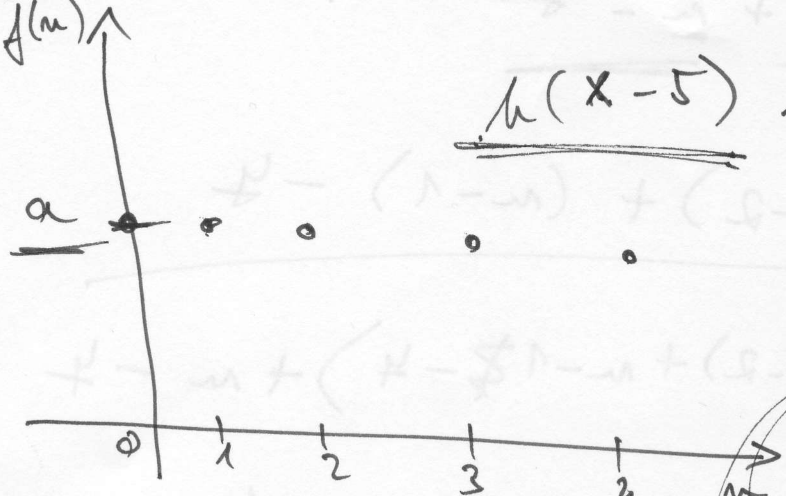
$(A,B) \in S \circ R$

$(B,D) \in S \circ R$

$(A,D) \in S \circ R$?

$h(\underline{435})$ $\underline{h(154)}$

$\underline{h(x-5)} + h(\ 157n > \div 3)$



$\underline{h(2)}$

$\underline{h(6)}$ $h(2)$

$h(4)$ $h(2)$

$\underline{h(8)}$ $h(2)$

$f(0) = f(1) \ldots = f(n) = f(n+1) = a$

$a = 9a - 32$

$-8a = -32$ $a \leq \ldots$

$a = 4$

$x \in (A - B) \Leftrightarrow \cancel{x} \in A \wedge x \notin B$

$x \in (A - B) \cap (B \cup C) \cap (C \cap D)$

$=$

$(A \cup D)$

$\cancel{A}$ $1. \subseteq 2. \wedge 2. \subseteq 1.$

$$f(n) = 2f(n-1) + n - 7$$

$$f(n-1) = 2f(n-2) + (n-1) - 7$$

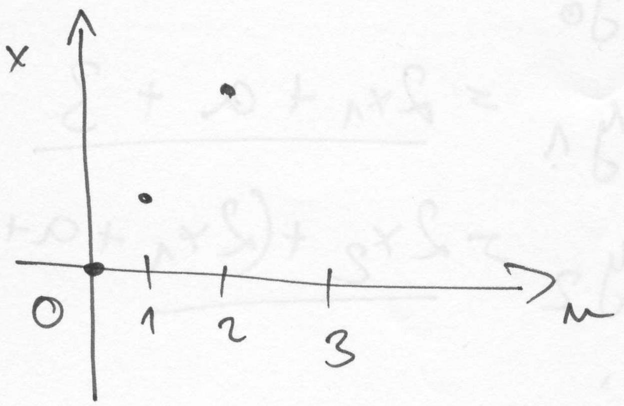
$$f(n) = 2\left(2f(n-2) + n - 1 - 7\right) + n - 7$$

$$f(n) = 4f^{(n-2)} + 2n - 2 - 14 + n - 7$$

$$f(n) = 4f(n-2) + 3n - 23$$

$$f(2) = 4f(0) + 6 - 23 =$$

$$= -17$$



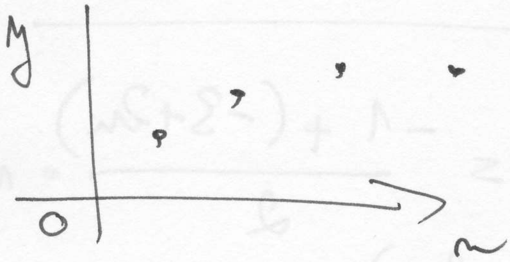
$x_0 = -1$

$x_1 = 0$

$x_2 = 1$

$\vdots$

$x_n = -1 + n$



$y_0 = a$

$y_1 = 3a$

$y_2 = 3 \cdot 3a$

$\vdots$

$y_n = 3^n a$

$x < y$

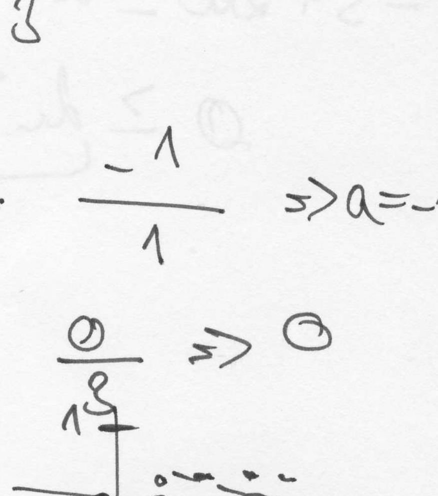
aby skončil, po n průchodech musí být $x_n \geq y_n$

$-1 + n \geq 3^n a \quad /: 3^n$

$a \leq \boxed{\frac{n-1}{3^n}} \quad \frac{-1}{1} \Rightarrow a = -1$

$\frac{0}{3} \Rightarrow 0$

$a \leq 0$



$x_0 = -3$

$x_1 = -1$

$x_2 = 1$

$\vdots$

$x_n = -3 + 2n$

$y_0 = a$

$y_1 = 2x_1 + a + 3$

$y_2 = 2x_2 + (2x_1 + a + 3) +$

$\vdots$

$y_n = 2\left(s_n(x)\right) + a + 3n$

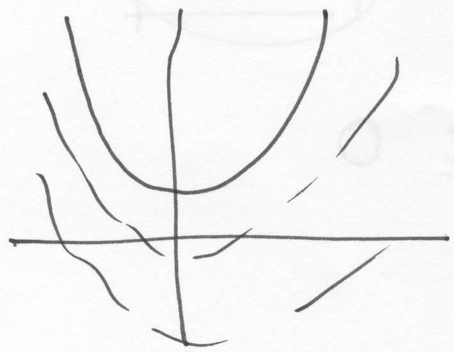
$$s_n(x) = \frac{-1 + (-3+2n)}{2} \cdot n = \frac{(-4 + 2n)n}{2}$$

$y_n = -4n + 2n^2 + a + 3n = 2n^2 - n + a$

$x_n \geq y_n$

$-3 + 2n \geq 2n^2 - n + a$

$0 \geq \underbrace{2n^2 - 3n + (a+3)}$



$$2x^2 - 3x + (a+3) = 0$$

$$D = (-3)^2 \cancel{4} - 4 \cdot 2 \cdot (a+3) \geq 0$$

$$9 - 8 \cdot (a+3) \geq 0$$

$$9 - 8a - 24 \geq 0$$

$$-8a \geq 15$$

$$a \leq \frac{-15}{8} \quad -1,\ldots$$

$$\underline{\underline{a = -2}}$$

```
input a;
 x ← -6
 y ← a
while x < y do
      x ← x + 3;
      y ← 4y + 2;
done
```

$x_0 = -6$

$x_1 = -3$

$x_n = -6 + 3n$

$y_0 = a$

$y_1 = 4 \cdot a + 2$

$y_2 = 4(4a+2) + 2$

$y_n = 4^n a + s_n \; (q = 2)$

$s_n = 2 \cdot \frac{2^n - 1}{2 - 1}$

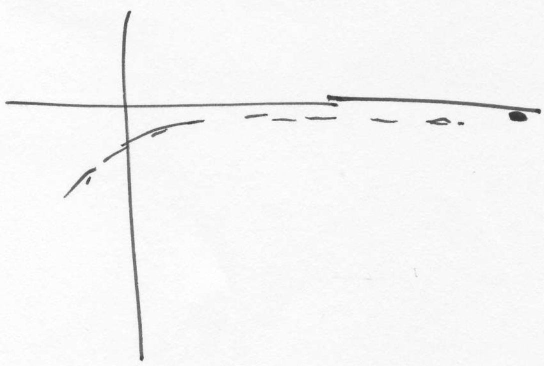
$$\underline{y_n = 4^n a + 2 \cdot 2^n + 2}$$

$$x_n \geq y_n$$

$$-6 + 3n \geq 4^n a + 2 \cdot 2^n + 2$$

$$-4^n a \geq 2 \cdot 2^n + \cancel{}\, 4 - 3n$$

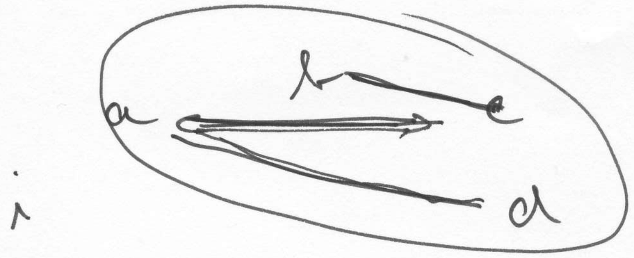
$$a \leq - \frac{2 \cdot 2^n - 3n + 4}{2^{2n}}$$



$n = \infty$

$a \leq -1$

$$\underline{\underline{a = -1}}$$



i

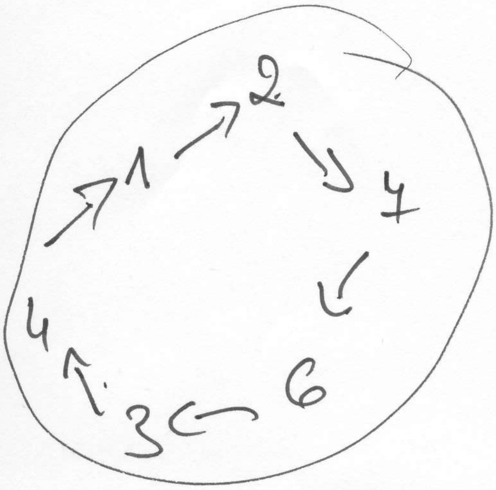
h

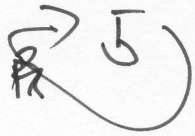
e

a, b, c, d   f, g   e   i   k

2. 3

(2, 7, 4, 1, 5, 3, 6)





(1, 2, 7, 6, 3, 4)

$g(1) \to g(37)$

$g(2) \to g(34)$

$g(3) \to g(31)$

$g(4) \to g(28)$

$g(5) \to g(25)$

$g(6) \to g(22)$

$g(7) \to g(19)$

$g(8) \to g(16)$

$g(9) \to g(13)$

$g(10) \to g(10)$

$g(11) \to g(7)$

$g(12) \to g(4)$

$g(13) \to g(1)$