✓⁻ ✓ ✓⁺ ✓⁺ $\hat{\sigma}$

Ways to create a universe

① ~~Gil~~ (zero) is a ~~Pavel~~ (natural number)

② Every ~~Pavel~~ (Natural #) has a ~~Merzbacker~~ (successor)

③ There is no ~~Pavel~~ (Nat. #) whose ~~Merzbacker~~ (succ) is ~~Gil~~. ○

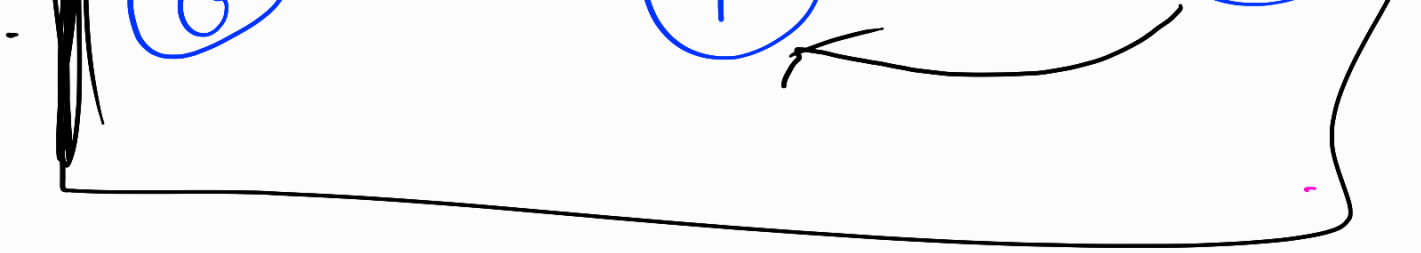
④ Every Merzbacker is a ~~Pavel~~

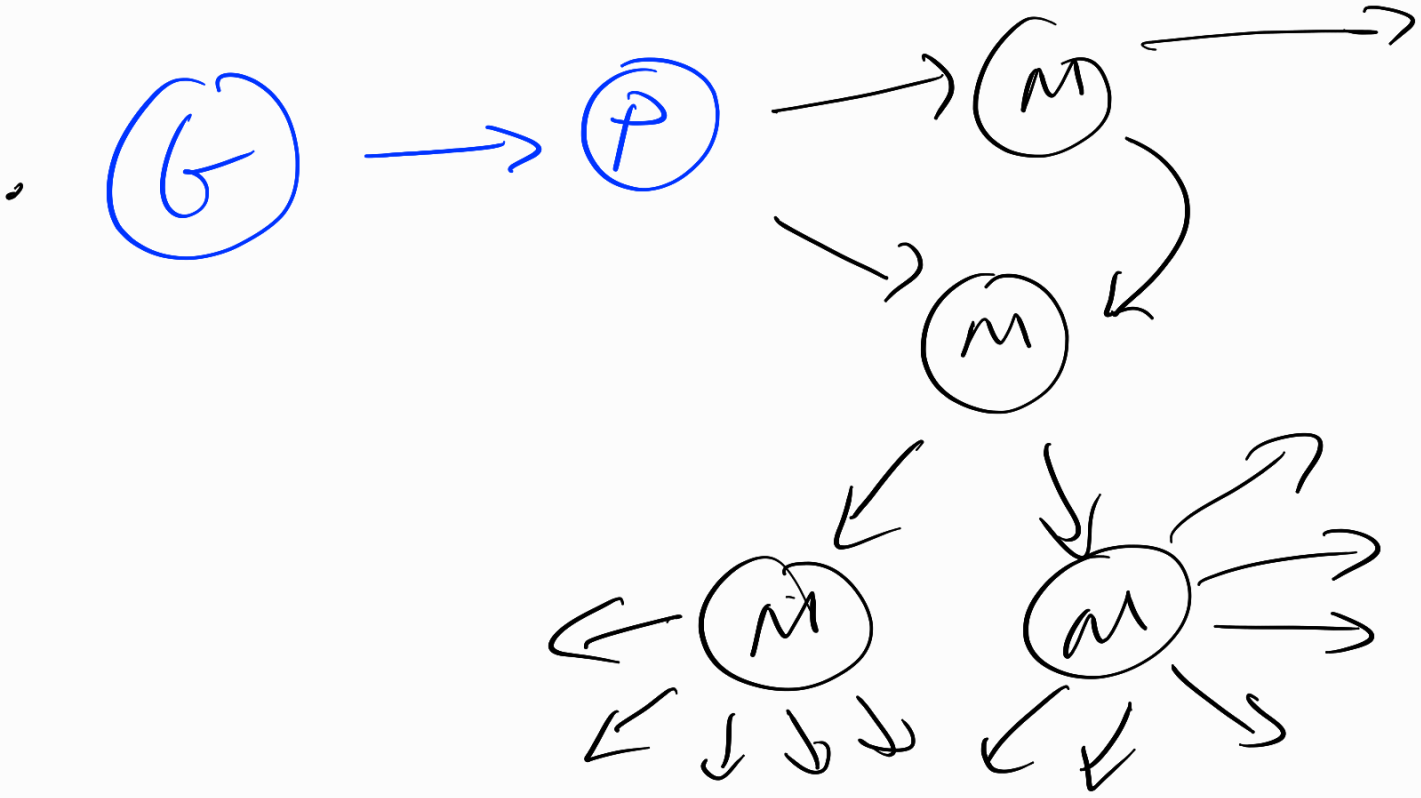
Gil
- pavel

Pavel
- have a Merzbacker

Merzbacker
- is a pavel

* Draw a pic!!

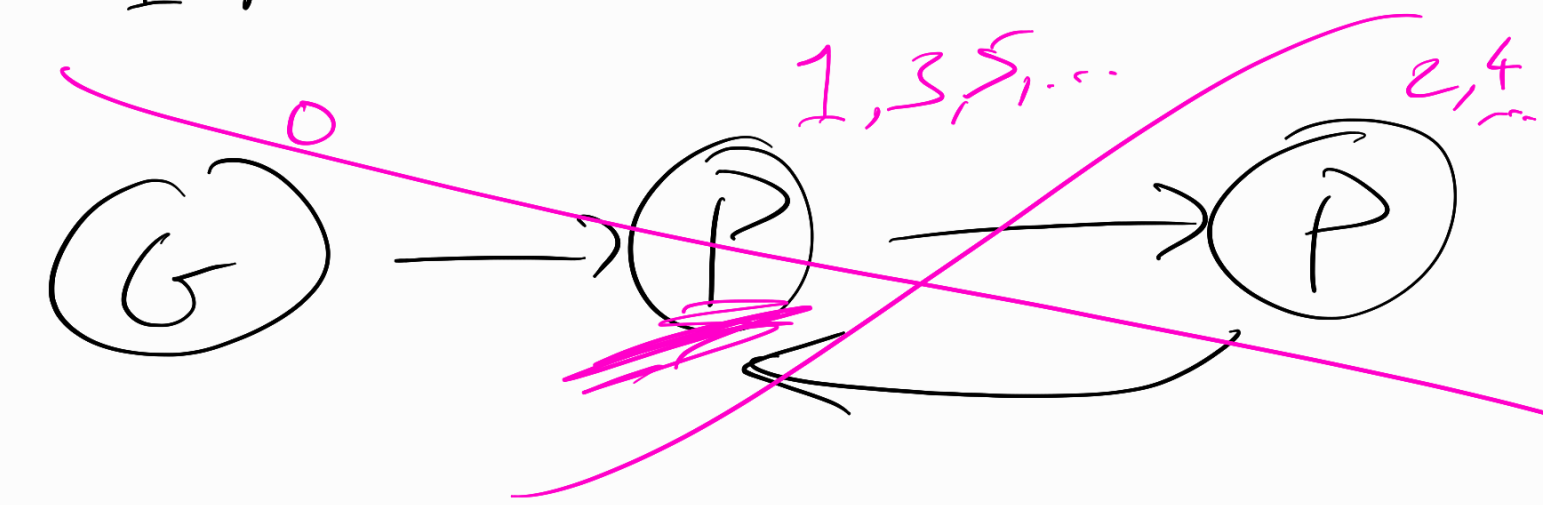


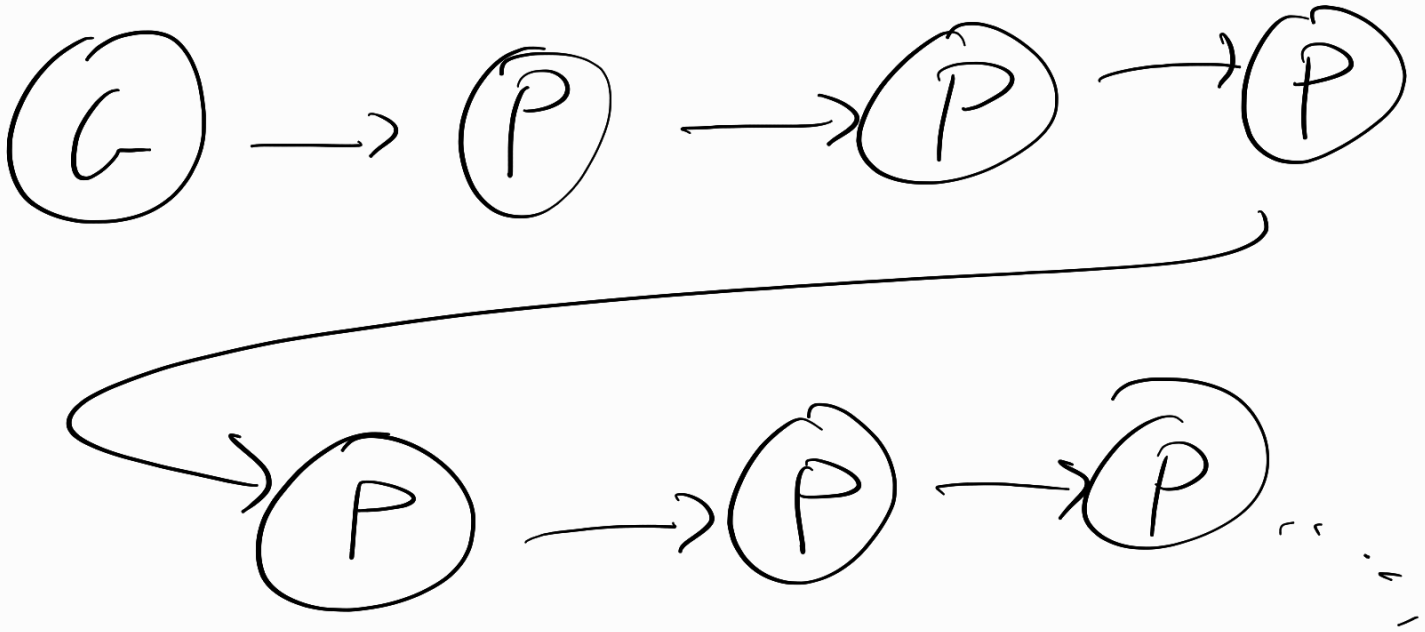


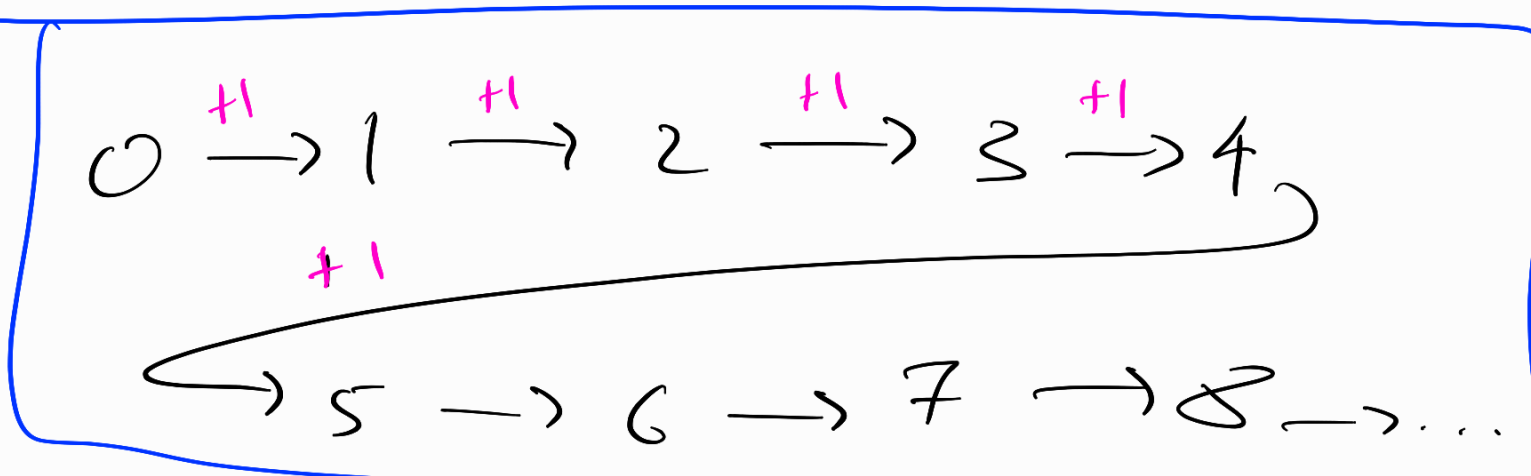
our universe

(5) every Pawel has exactly

1 Matchmaker







index	1	2	3	4	5	6	7	8
odds:	1	3	5	7	9	11	13	...
sum of odds:	1	4	9	16	25	36	49	64

1^2 2^2 3^2 4^2 5^2 6^2 7^2 $+15$ 8^2

PO MI = Principle Of Mathematical Induction

① ② ③ ④

3 9 27 81 243 ....

Pattern: multiply by 3

4th term is 81

Def. A sequence is a list of numbers.

Be Careful w/ handwriting

$3 \cdot x = x \cdot 3$

$3x_2 \neq$ [illegible]

$3x^2 \neq 3x2 \neq 3x_2$

$3x_2^2 = 3 \cdot x_2 \cdot x_2$

(a_n) is a sequence

↑

the LIST

(x_n) is also a sequence

index	①	②	③	④	⑤
$(a_n) =$	1	3	6	9	24
$(x_n) =$	2	5	7	9	11

Define new list

$$S_n = 2a_{(n)} + x_{(n)}^2$$

$S_1 = 2(1) + 2^2 = 2 + 4 = 6$

$S_{12} = 2a_2 + x_2^2$

$= 2(3) + 5^2 = 6 + 25 = 31$