

Difference Dynamics

eg.1. $42, 38, 8 \rightarrow 30, 34 \rightarrow 26, 4, 10 \rightarrow 22, 6, 16 \rightarrow 16, 10, 6 \rightarrow 6, 4, 10 \rightarrow 2, 6, 4 \rightarrow 4, 2, 2 \rightarrow 2, 0, 2 \rightarrow 2, 2, 0 \rightarrow 0, 2, 2$

eg.2. $17, 28, 41 \rightarrow 11, 13, 24 \rightarrow 2, 11, 13 \rightarrow 9, 2, 11 \rightarrow 7, 9, 2 \rightarrow 2, 7, 5 \rightarrow 5, 2, 3 \rightarrow 3, 1, 2 \rightarrow 2, 1, 1 \rightarrow 1, 0, 1 \rightarrow 1, 1, 0$

eg.3. $15, 10, 5 \rightarrow 5, 5, 10 \rightarrow 0, 5, 5 \rightarrow 5, 0, 5 \rightarrow 1, 1, 1 \rightarrow 2, 1, 1 \rightarrow 1, 1, 1$

Let the initial set be called A .

$A = \{a_1, a_2, a_3\}$, or $a_i \in \mathbb{Z}, a_i \geq 0$
 or $a_i = n b_i, i=1, 2, 3, n \in \mathbb{Z}^+$

Where n is HCF of a_1, a_2, a_3 i.e. b_1, b_2, b_3 are co-prime.

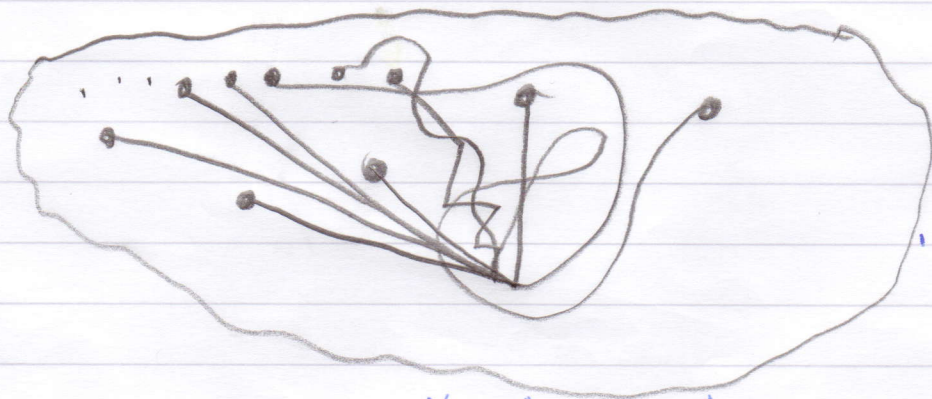
$\therefore A = \{a_i\}_{i=1}^3 = \{n b_i\}_{i=1}^3$

Let the rule be R

$R A = R \{a_i\} = R \{n b_i\} = n R \{b_i\}$

Now $R \{b_i\} = \{0, 1, 1\}$ — my feeling

$\therefore R A = \{n \times 0, n \times 1, n \times 1\} = \{0, 1, 1\}$



Space of all sets

Many A s converge to the same set.

* When $n(A) = 4$

eg. $\{1, 2, 3, 4\} \rightarrow \{1, 1, 1, 3\} \rightarrow \{0, 0, 2, 2\} \rightarrow \{0, 2, 0, 2\} \rightarrow \{2, 2, 2, 2\} \rightarrow \{0, 0, 0, 0\}$

eg. $\{2, 4, 6, 8\} \rightarrow \{2, 2, 2, 6\} \rightarrow \{0, 0, 4, 4\} \rightarrow \{0, 4, 0, 4\} \rightarrow \{4, 4, 4, 4\} \rightarrow \{0, 0, 0, 0\}$

11/11/21

last activity

Diophantine Equations

← $2, 2, 7, 1 \rightarrow 19, 5, 6, 20 \rightarrow 14, 1, 14, 1 \rightarrow 13, 13, 13, 13 \rightarrow 0, 0, 0, 0$

My feeling is:

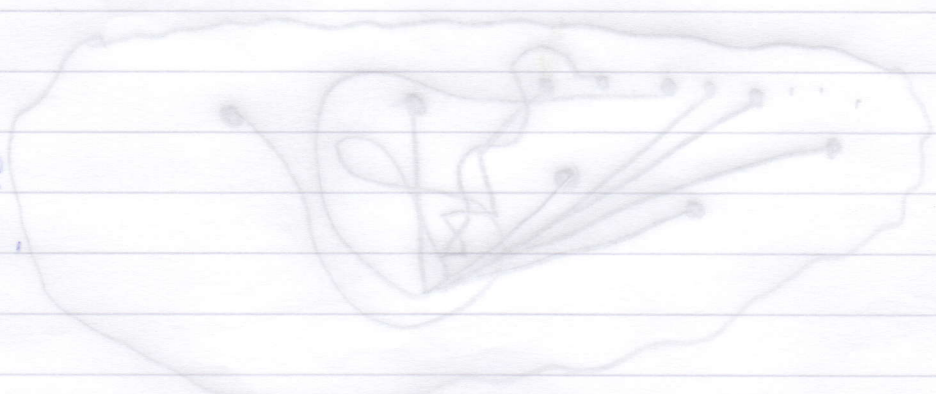
$\{a_i\}_{i=1}^4$ are co-prime, is $\{0, 0, 0, 0\}$

← all $A \rightarrow \{0, 0, 0, 0\}$ for $e \in \mathbb{P}$

When $n(A) = 5$

eg. $1, 2, 3, 4, 5 \rightarrow 1, 1, 1, 1, 4 \rightarrow 0, 0, 0, 0, 3 \rightarrow 0, 0, 3, 0, 3$
 $\rightarrow 0, 3, 3, 3, 3 \rightarrow 3, 0, 0, 0, 3$

I could not find a general rule for $n=5$.



also...

at ...

← $(2, 2, 7, 1) \leftarrow (19, 5, 6, 20) \leftarrow (14, 1, 14, 1) \leftarrow (13, 13, 13, 13) \leftarrow (0, 0, 0, 0)$

$0, 0, 0, 0 \leftarrow 1, 1, 1, 1 \leftarrow 10, 1, 0, 0 \leftarrow 1, 0, 0, 0 \leftarrow 1, 1, 1, 1 \leftarrow 1, 1, 1, 1$