

Examples

Solutions

Tent map:

$$T(x) = \begin{cases} 2x & 0 \leq x \leq 1/2 \\ 2(1-x) & 1/2 \leq x \leq 1 \end{cases}$$

If $x < 1/4$, then

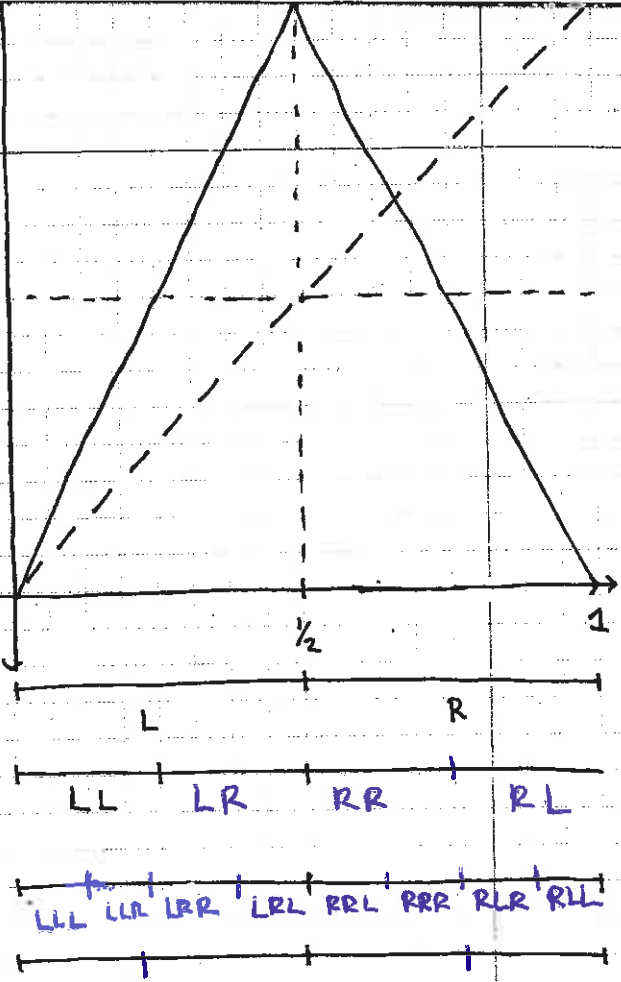
$x \in L$ and $f(x) \in L$.

\Rightarrow itineraries start with LL

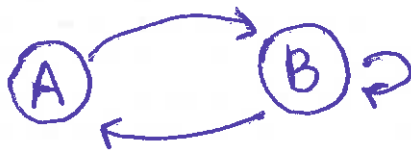
If $x \in [1/4, 1/2]$, then

$x \in L$ and $f(x) \in R$.

\Rightarrow start with LR



$$G(x) = \begin{cases} \frac{1+\sqrt{5}}{2}x + \frac{3-\sqrt{5}}{2} & 0 \leq x \leq \frac{3-\sqrt{5}}{2} \\ -\left(\frac{1+\sqrt{5}}{2}\right)(1-x) & \frac{3-\sqrt{5}}{2} \leq x \leq 1 \end{cases}$$



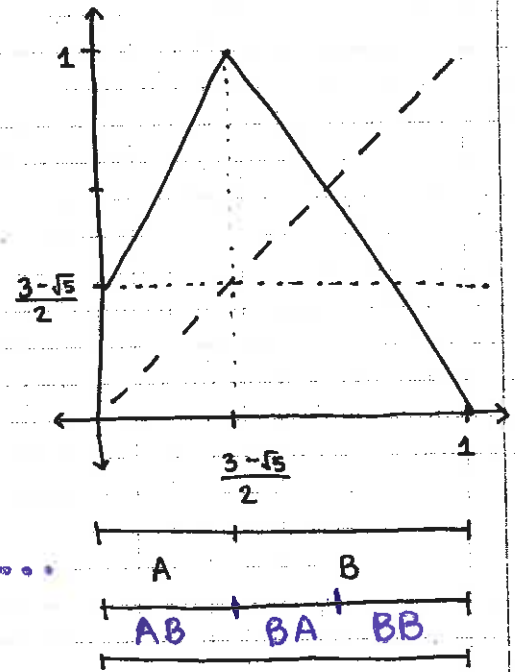
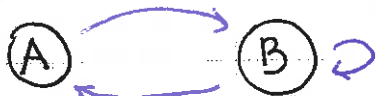
The number of intervals is the number of paths in

2, 3, 5, 8, 13, 21, 34, 55, ...

Fibonacci!

Transition graph Draw \curvearrowright if it is possible to move from I_j to I_k .

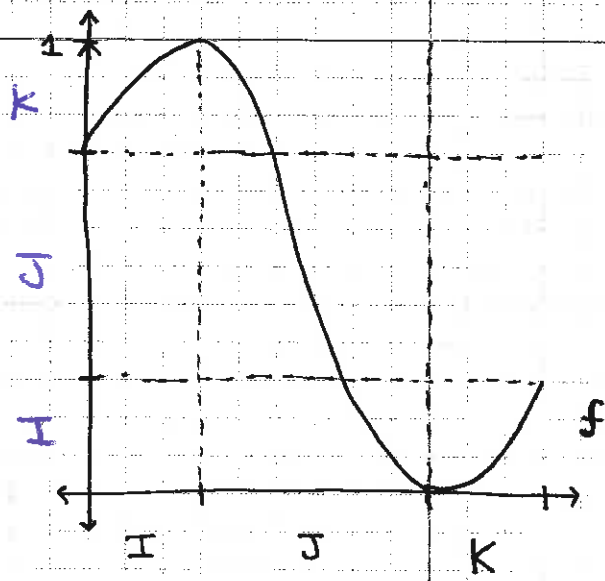
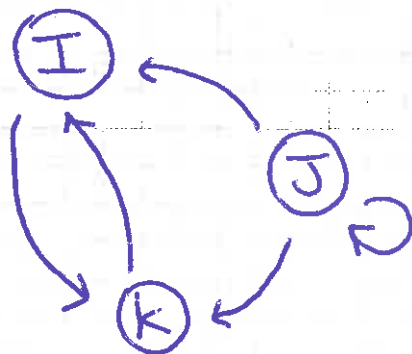
Draw a directed graph with vertices labeled by the partition and $I_j \rightarrow I_k$ if and only if $I_k \subseteq f(I_j)$.



Extra Questions: How many intervals of level n?

How many intervals of level n?

Draw the transition graph:



What are the possible infinite sequences of symbols?

sequences where "I" can only be followed by "K" and "K" can only be followed by "I".

$\Rightarrow J^n (IK)^\infty$ or $J^n (KI)^\infty$

$f_4(x) = 4x(1-x)$

What are the intervals?

$L = [0, 1/2]$

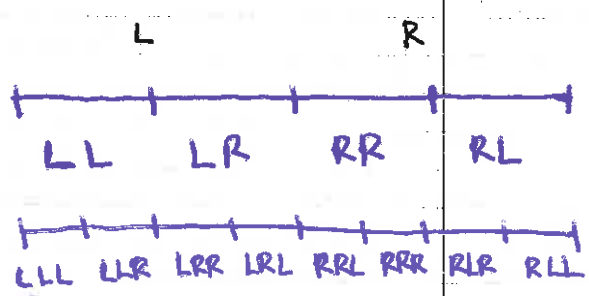
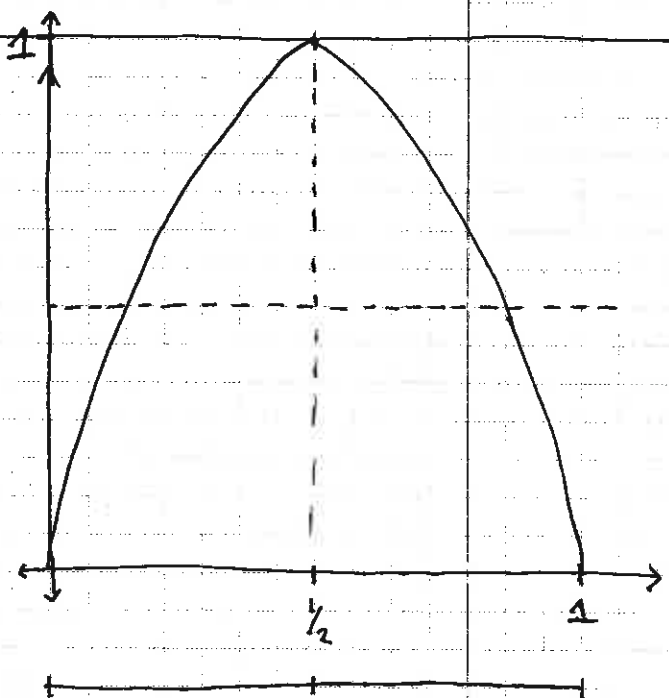
$R = [1/2, 1]$

Transition graph?



The ordering of the level ³ intervals?

(4 is long...)



notice it's the same order as tent