Worksheet #4: Itineraries

(1) Label all the intervals in the 3-level itinerary of $G(x) = 4x(1-x)$.
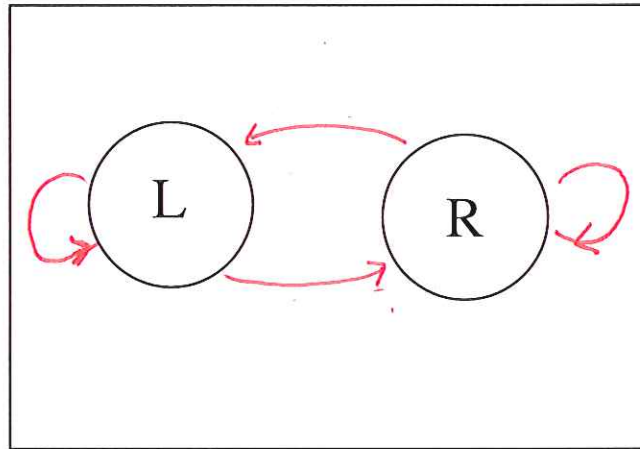

L R

LL LR RR RL

LLL LLR LRR LRL RRL RRR RLR RLL
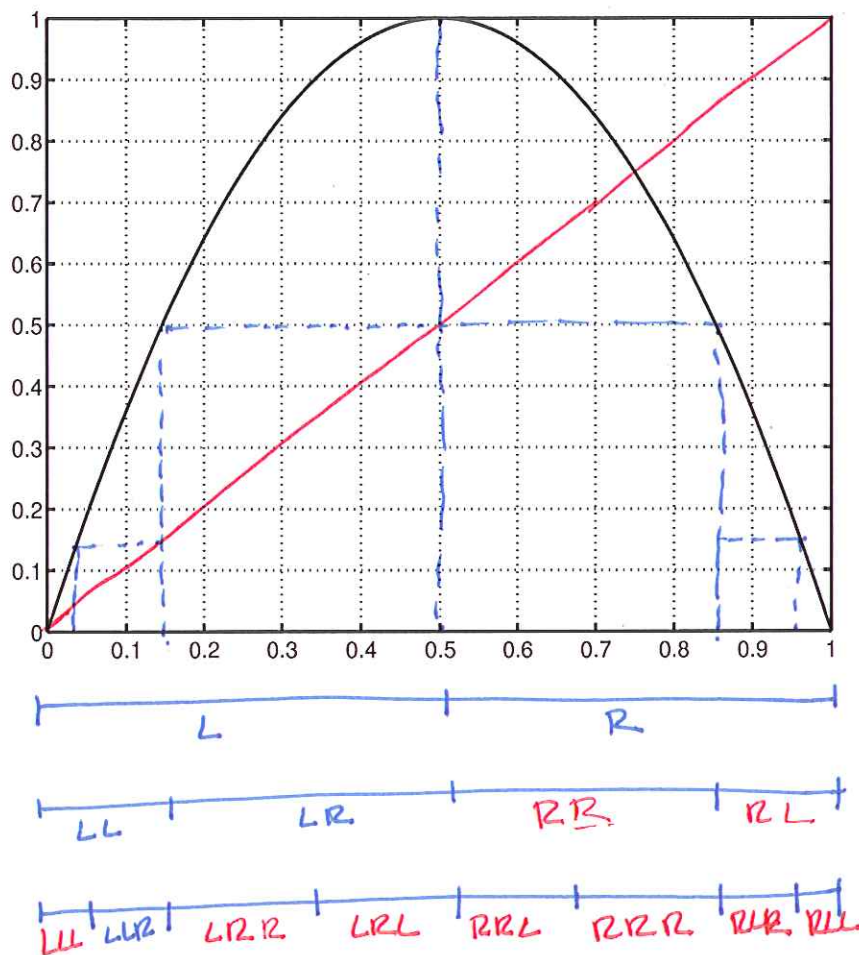
(2) What do you predict the order for level 4 will be?

$LLLL$, $LLLR$, $LLRR$, $LLRL$, $LRRL$, $LRRR$, $LRLR$, $LRLL$,
$RRLL$, $RRLR$, $RRRL$, $RLRL$, $RLRR$.

(3) Can you write a general rule?

(1) If an interval ends with L, split into LL & LR. If #R's is odd
reverse order.

(2) If an interval ends w/ R, split into RL & RR. If #R's
is odd, Reverse order.

(4) Transition graphs.

- Draw an arrow from L to R. Is it possible to go from R to L? If so, draw it.
- What does this imply about the sets $f(L)$ and R? (use $\cup, \cap, \subset$)

- Add all other possible arrows. (There should be 4 total.)

(5) Consider x_0 in LRLLRRLR. Come up with a subinterval of LRLLRR ~~but~~ that maps x_0 to $\geq \frac{1}{4}$.

$$y_0 \in (LRLLRRRL)$$