

Math 307 Supplemental Notes: Skinny Baker Map Summary

1. All orbits are bounded.
2. The Lyapunov exponents of all orbits are $-\ln 3$ and $\ln 2$. (This means asymptotically periodic orbits are possible; each periodic orbit has an attracting direction.)
3. Since B is one-to-one, an orbit can not be eventually periodic unless it is periodic.
4. An orbit is asymptotically periodic if and only if the itinerary is eventually periodic to the right.
5. Therefore, a point whose itinerary is not eventually periodic to the right is not asymptotically periodic. For example, the orbit of the points whose itinerary is $\dots LR.LRLRRLRRRLRRRRL\dots$ is not asymptotically periodic.
6. Therefore, the skinny baker map B has chaotic orbits.