

MA 771 Exercises

- 4.1. Let $\sigma : \Sigma_n \rightarrow \Sigma_n$ be the shift map on the two-sided shift space with n symbols.
- (a) What is $\Omega(\sigma)$? Show that the periodic points are dense in Σ_n .
 - (b) Show that σ has a dense orbit.
 - (c) How many points of period 5 are there in Σ_2 ?
 - (d) How many points of period 6 are there in Σ_2 ?
- 4.2. Let N_1 be the line $y = x$ and N_2 be the parabola $y = ax(1 - x)$ in \mathbb{R}^2 . For what values of a are N_1 and N_2 transverse?

Here's a vague statement of a problem that you might like to think about:

Derive a "simple" formula for the number of periodic points of period n (period exactly equal to n) for the shift map on the two-sided, full shift Σ_2 ?

By simple, I mean a formula that is not recursive. I'm not assigning this problem now because it is too vague, and studying for the preliminary exams is more important than spending time trying to figure out what I mean. However, it is worth thinking about this problem eventually.