MA 771 Exercises

1.4. Give an example of a compact space X and a map $f : X \to X$ such that

$$\Omega(f|\Omega) \neq \Omega(f).$$

1.5. Suppose that X is a compact space and $f : X \to X$ is a homeomorphism. If U is a neighborhood of $\Omega(f)$ and $x \in X$, show that there exists an integer N such that $f^n(x) \in U$ for all $n \geq N$.

1.6. Let $f : \mathbb{R} \to \mathbb{R}$ be given by $f(x) = x/2$ and $g : \mathbb{R} \to \mathbb{R}$ be given by $g(x) = x/3$. Show that any topological conjugacy between f and g cannot be a Lipschitz homeomorphism. (A Lipschitz homeomorphism h is a homeomorphism for which both h and h^{-1} are Lipschitz maps.)

1.7. Robinson 2.21 (p. 62)

1.8. Robinson 2.22 (p. 62—assume that $a \neq 0$)

1.9. Robinson 2.25 (p. 62)

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