

MA 771 Exercises

- 3.7. Let $f : T^2 \rightarrow T^2$ be the time-one map of the negative gradient flow for a slightly tilted torus (as described in class). In addition, let $h : T^2 \rightarrow T^2$ be the C^∞ version of a Dehn twist around the “arm band” B on the torus determined by the loop ℓ and its image $f(\ell)$. Finally, let $g = h \circ f$.
- (a) Show what $\Omega(f) = \Omega(g)$.
 - (b) What is $W^s(p_2)$? (The point p_2 is the saddle fixed point below the arm band.)
 - (c) Show that g is not the time-one map of any gradient flow. (This part is not so bad if you know some algebraic topology. If not, I am not sure how you would go about answering the question.)