

MATH W4051 PROBLEM SET 9
DUE NOVEMBER 6, 2008.

INSTRUCTOR: ROBERT LIPSHITZ

- (1) Munkres 53.4.
- (2) Munkres 53.5.
- (3) Munkres 54.1.
- (4) Munkres 54.5.
- (5) Munkres 54.8.
- (6) Munkres 58.2.
- (7) Does the Borsuk-Ulam theorem hold for the torus? That is, the torus is $T^2 = S^1 \times S^1$, so there's an obvious notion of antipodal map $(\theta_1, \theta_2) \mapsto (-\theta_1, -\theta_2)$. Is it true that any map $T^2 \rightarrow \mathbb{R}^2$ must take a pair of antipodal points to the same point?

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