MA 571: Homework # 10 due Monday November 9

The second midterm will be Friday November 13.

It will consist of three problems selected from the "Problems for the second midterm" which is posted on the course webpage.

Please read Section 52. Read the statement of Theorem 54.5 (but nothing else in Section 54) and read from the beginning of Section 55 to the bottom of page 351, but you can skip the proof of 55.3 until I go over it in class.

Please do:

p. 334 # 2, 3, 4, 6

p. 353 # 1, 2

A) Prove that every m-manifold is locally path-connected.

B) Prove that every m-manifold is regular. (Be careful.)

C) Prove that there is no 1-1 continuous function $i : S^1 \to \mathbb{R}$. You may assume any fact about trigonometric functions. (Note: this shows in particular that there is no $i : S^1 \to \mathbb{R}$ with $p \circ i$ equal to the identity map, where p is the map in the note on the Fundamental Group of the Circle).

D) Prove Proposition C from the note on the Fundamental Group of the Circle.