

Fall, 2009

MATH 3500(H)
PROBLEM SET #12

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DUE Wednesday, November 11, 2009.

Problems to work but not hand in:

§4.5: #3, 6.

§5.1: #1, 3, 4a, 9.

Problems to turn in:

§4.4: #16 (4).

§4.5: #2a,b,e (4), 4* (3), 11[†] (3).

§5.1: #2[†] (3), 4b (3), 8 (3), 10 (3), 11[§] (3), 12 (3).

Challenge problems (Turn in separately):

§4.5: #8 (2), 10 (5), 12 (3), 13 (4).

§5.1: #5 (3), 6 (2), 7 (3), 13 (4).

*Hint: Why does $h(\mathbf{x}) = 0$ locally define $x_2 = \psi(x_1)$ for some \mathcal{C}^1 function ψ ?

†Provide far more details than the back of the book.

‡Hint: See Exercise 2.3.2. Since there are two ways X can fail to be compact, you will need to give a function f for each of those cases.

§Hint: Choose $\mathbf{x}_k \in S_k$ for each $k \in \mathbb{N}$.