

## Problem Set 8

Due November 15th at 4 pm in room 2-285.

Hand in parts 1 and 2 separately. Put your name on each part.

### Part 1

1. Problem 15 from page 115. Omit the question about vector valued functions.
2. Problem 16 from page 116.
3. Problem 1 from page 138
4. Problem 2 from page 138

### Part 2

5. Problem 5 from page 138
6. Problem 6 from page 138
7. Let  $f: [0, \infty) \rightarrow [0, \infty)$  be continuous, strictly increasing and with  $f(0) = 0$ . Prove that

$$\int_0^a f(x)dx + \int_0^b f^{-1}(x)dx \geq ab$$

for any  $a, b > 0$ , and give a condition for equality to hold.