

Problem Set 8

Due November 17th at 4 pm in room 2-108.

Hand in parts 1, 2 and 3 separately. Put your name and whether you are registered for 18.100B or 18.100C on each part.

Part 1

1. Problem 15 from page 115.
2. Problem 16 from page 116.
3. Problem 1 from page 138

Part 2

4. Problem 2 from page 138
5. Problem 5 from page 138

Part 3

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.