

## Math 134, Fall 2014, Homework 8

The problems are from Calculus, One and Several Variables, 10th Edition by Salas, Hille and Etgen.

### For practice - do not hand in

**Section 7.1**, Problems 12, 42, 52.

**Section 7.2**, Problems 12, 23.

**Section 7.3**, Problems 8, 12, 18, 24, 30, 32, 52, 59.

**Section 7.4**, Problems 32, 57, 68, 71.

**Section 7.5**, Problems 23, 28, 34, 43.

**Section 7.7**, Problems 7, 9, 31, 33, 47, 52, 69.

Also, look at the proof of Theorem 7.1.8 on the course webpage and read through it. Some steps are missing their justifications. Give reasons referring to previous steps or do the missing computations.

### To hand in

**Section 7.3**, Problem 66.

**Section 7.4**, Problems 72, 73.

**Section 7.5**, Problems 36, 46.

**Section 7.7**, Problems 70.

Also,

1. Complete the proof of the Lemma from lecture by doing the missing steps. Rewrite the proof in its complete form. It is posted on the course webpage.
2. For  $x > 1$  let

$$K(x) = \int_e^x \frac{dt}{\ln(t)}$$

Show that if  $a$  and  $b$  are positive constants, then the following two equalities hold:

$$\int_e^x \frac{dt}{\ln(t+a)} = K(x+a) - K(e+a) \tag{a}$$

$$\int_e^x \frac{dt}{b + \ln(t)} = e^{-b} \{K(e^b x) - K(e^b e)\} \tag{b}$$