

## Math N1B Lec 002 Homework 2

**7.5:** 8, 30, 58

**7.7:** 16, 22

**7.8:** 8, 10, 16, 22, 26, 52

**8.1:** 2, 10, 12

**8.2:** 4a, 8, 12

In addition to the above problems in the book, do the following problems:

**Problem 1.** Let  $n$  be a nonnegative integer. Show that

$$\int_0^{\infty} x^n e^{-x} dx$$

converges and has value  $n!$ . (Hint: Modified appropriately, Exercise 7.1.52 may be useful)

**Problem 2.** Show that

$$\int_1^{\infty} \frac{\sin x}{x} dx$$

converges. (Hint: Integrate by parts)

If you don't have a copy of the book, see the bcourses assignment for pictures of the pages in the book containing the exercises.

Submit these problems on Gradescope by 07/07 23:59. You should do more practice problems in these sections for yourself.

DEPARTMENT OF MATHEMATICS, EVANS HALL, UNIVERSITY OF CALIFORNIA, BERKELEY, CA 94720, USA

*Email address:* leonard.tomczak@berkeley.edu