

**Homework Set 6**

DUE: MARCH 11, 2019 (AT THE BEGINNING OF CLASS)

**To be handed in***Please write your solution to Problem 1 on a single sheet of paper!*

1. Evaluate the following improper integrals:

a)  $\int_0^{+\infty} x^2 e^{-x} dx$

b)  $\int_{-\infty}^{+\infty} \frac{t^2}{t^2 + 1} dt$

Hint: To integrate  $\frac{t^2}{t^2 + 1}$ , write  $\frac{t^2}{t^2 + 1} = \frac{(t^2 + 1) - 1}{t^2 + 1} = 1 - \frac{1}{t^2 + 1}$ 

2. Textbook (5th edition) Section 8.8, Exercises 1-4, 19-24, 75-78