MAT226, Spring 2020 **Renato Ghini Bettiol**

Homework Set 8

Due: Apr 20, 2020 (1:00pm EDT via Blackboard)

To be handed in:

Please write your solution to Problems 1 and 2 on a single sheet of paper!

1. Compute the following iterated integrals:

   a) $\displaystyle\int_{-1}^{1}\int_{0}^{2} x^3y + xy^2 - 1 \,\mathrm{d}x\,\mathrm{d}y$

   b) $\displaystyle\int_{0}^{3}\int_{-2x}^{2x} 5y - 3 \,\mathrm{d}y\,\mathrm{d}x$

   c) $\displaystyle\int_{0}^{2}\int_{y^2}^{1} ye^x \,\mathrm{d}x\,\mathrm{d}y$

2. Sketch the indicated regions R and compute the following double integrals over R. Remember that only one order of integration (first in x, second in y; or first in y, second in x) might be feasible. Make sure to use limits for improper integrals.

   a) $\displaystyle\iint_R \sqrt{1-y^2}\,\mathrm{d}A$
   where R is the triangle with vertices $(0,0)$, $(0,1)$, and $(1,1)$.

   b) $\displaystyle\iint_R \frac{1}{\ln y}\,\mathrm{d}A$
   where R is the region bounded by $y = e^x$ and $y = 5$, with $0 \le x \le \ln 5$.

NOT to be handed in (but recommended for you to practice with):

3. Textbook (5th edition) Section 14.1, Exercises 11-16, 47-52

4. Textbook (5th edition) Section 14.2, Exercises 7-11, 13-17

5. Textbook (5th edition) Section 14.3, Exercises 9-12, 17-19, 29-31