Section 2.6 **Math 2000 Worksheet** Winter 2020

For practice only. Not to be submitted.

1. Compute $\int f(x, y)\, dx$ and $\int f(x, y)\, dy$ for each of the following functions.

   (a) $f(x, y) = \dfrac{y}{x^2 + y^2}$

   (b) $f(x, y) = xy \ln(x)$

2. Evaluate each of the following iterated integrals over rectangles.

   (a) $\displaystyle \int_0^\pi \int_0^4 y \cos\left(\frac{x}{4}\right)\, dy\, dx$

   (b) $\displaystyle \int_{-2}^1 \int_0^6 \frac{4y + 3}{7 - x}\, dx\, dy$

   (c) $\displaystyle \int_1^5 \int_0^{\frac{\pi}{4}} 3y^2 \sec^2(x)\, dx\, dy$

3. Evaluate $\displaystyle \iint_R (x^2 - xy + y^3 - 4)\, dA$ where $R : [-1, 2] \times [-2, 1]$.

4. Compute the area V of the region which lies under the surface $z = \dfrac{x^2}{\sqrt{9 - y^2}}$ and above the rectangle $R : [-3, 3] \times \left[0, \frac{3}{2}\right]$.