

Math 13, Winter 2018

Pset 1, due Wed Jan 10

Please show your work. No credit is given for solutions without justification.

- (1) Calculate the value of the Riemann sum for the integral $\int_1^3 \int_0^2 x^3 y \, dy \, dx$, using a regular partition of the domain of the integral, with $\Delta x = \frac{1}{2}$ and $\Delta y = \frac{1}{2}$. Choose midpoints as sample points of the subrectangles. (*See Exercise 15.1.19 for the exact value of the integral.*)

You may use a calculator for this problem.

- (2) Use a double integral to calculate the volume of the solid region below the plane $z = 4 - x - y$ and above the rectangle in the xy -plane with $0 \leq x \leq 2$ and $0 \leq y \leq 2$.
- (3) Evaluate the double integral $\iint_{\mathcal{R}} x \cos(xy) \, dA$, with $\mathcal{R} = [0, \pi] \times [0, 1]$.