HW 6
Math 261, F18

Please see the course syllabus for details on how to turn in your homework assignments. This one is due at the beginning of your class on **Friday, October 19**.

1. Suppose we wish to integrate $f(x, y) = 3x^2 - xy + 3$ over the rectangle given by $0 \leq x \leq 2$, $1 \leq y \leq 5$. Set up this integral using the variable order $dxdy$ but do not compute the answer.
2. Now compute the answer to the previous problem.
3. Repeat problem 1 using variable order $dydx$.
4. Compute the answer to problem 3.
5. Suppose we wish to integrate some function $g(x, y)$ over the triangle with vertices $(0, 0)$, $(0, 2)$, and $(1, 2)$. Set up this integral using the variable order $dxdy$. (Do not compute the answer.)
6. Compute the volume of the octahedron in $\mathbb{R}^3$ with vertices at $(0, 0, \pm 1), (0, \pm 1, 0), (\pm 1, 0, 0)$. (Hint: exploit the symmetries of the problem to reduce to a problem that may be computed as a simple double integral).