Math 20C **Homework 7** **Due December 6, 2019**

Note: *The score you earn will be based on the correctness of your solutions. A "right answer" will earn no credit without a correct solution to support it.*

(6 points) 1. Evaluate the double integral $\iint_D xy\,dA$, where the region D is the triangular region whose vertices are $(0,0)$, $(0,2)$, $(2,0)$.

(6 points) 2. Evaluate $\iint_D y\,dA$, where D is the set of points (x,y) such that $0 \le \frac{2x}{\pi} \le y$, and $y \le \sin(x)$.

(6 points) 3. Change the order of integration and evaluate: $\int_0^1 \int_{\sqrt{y}}^1 e^{x^3}\,dx\,dy$.

(6 points) 4. If $D = [-1,1] \times [-1,2]$, show that $1 \le \iint_D \dfrac{dx\,dy}{x^2+y^2+1} \le 6$.

(6 points) 5. Perform the indicated integration over the given box: $\iiint_B x^2\,dx\,dy\,dz$, $B = [0,1]\times[0,1]\times[0,1]$.

(6 points) 6. Find the volume of the solid region bounded by $x = y$, $z = 0$, $y = 0$, $x = 1$, and $x+y+z = 0$.

(6 points) 7. Let D be the unit disk $x^2+y^2 \le 1$. Evaluate $\iint_D \exp\left(x^2+y^2\right)\,dx\,dy$ by making a change of variables to polar coordinates.

(6 points) 8. Integrate $z\,e^{x^2+y^2}$ over the cylinder $x^2+y^2 \le 4$, $2 \le z \le 3$.