Quiz, Oct. 16

Name:

Volume (8 Pts). Compute the volume of the solid which lies in the first octant and is bounded by

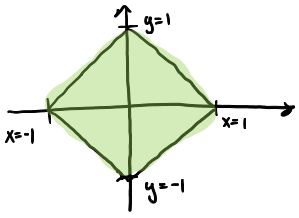
$$x + y + z \leq 1$$

(It may be easiest to first draw a picture!)

Rotational Inertia (4 pts). Compute the rotational inertia of a disk centered at the origin with radius 1, whose density given by $\rho(x, y) = \frac{1}{x^2+y^2}$.

Jacobians (8 Pts). Compute the integral of $f(x, y) = x + y$ on the drawn area using the change of coordinates

$$u = x + y \qquad\qquad v = x - y$$



Bonus Problem. *Worth no points!* Prove, using calculus, the following geometric identity: