MATH 11: MULTIVARIABLE CALCULUS FALL 2018 HOMEWORK #6

Please turn in your completed homework assignment by leaving it in the boxes labeled "Math 11" in the hallway outside of Kemeny 105 anytime before 3:30 p.m. on **Tuesday**, **October 23**.

Problem 1. Evaluate the following integral by changing to polar coordinates,

$$\int_0^2 \int_0^{\sqrt{2x-x^2}} \frac{1}{\sqrt{x^2+y^2}} \, dy \, dx.$$

Problem 2. Let *E* be the solid region bounded by the surface $y = x^2$ and the two planes z = 0 and y + z = 1.

- (a) Explain, without calculating the integral, why the value of the triple integral $\iiint_E z \, dV$ must be less than the volume of the solid E.
- (b) Evaluate the triple integral $\iiint_E z \, dV$.

Date: Due Tuesday, October 23, 3:30 p.m.