Math 173 - Quiz 11

Name _____

May 3, 2018

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (4 points) The space region D lies in the 1st octant bounded by the coordinate planes and the sufaces $x^2 + y^2 = 4$ and $z = x + y$. Find the average value of

$$f(x, y, z) = x + y^2 + z^3$$

on D. Use your calculator or computer algebra system to evaluate all required integrals.

2. (6 points) Let T be the solid tetrahedron in the 1st octant whose vertices are $(0,0,0)$, $(1,0,0)$, $(0,2,0)$, and $(0,0,3)$. The density of the tetrahedron at (x,y,z) is given by $\rho(x,y,z) = x+y+z$. Find the center of mass. Use your calculator or computer algebra system to evaluate all required integrals.