

## Group Quiz 9 Calculus III Fall 2015

Names:.....

Solve the following problems. Each problem is worth 5 points.

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**Q1.** Use a triple integral to find the volume of the solid enclosed by the cylinder  $y = -x^2$  and the planes  $z = 0$  and  $z - y = 4$ .

**Q2. (a.)** Use cylindrical coordinates to evaluate

$$\iiint_E z \, dV$$

where  $E$  is the solid **in the first octant** that lies under the paraboloid  $z = 9 - x^2 - y^2$ .

**(b.)** Use spherical coordinates to evaluate

$$\iiint_E (9 - x^2 - y^2) \, dV$$

where  $E$  is the solid that lies between the spheres  $x^2 + y^2 + z^2 = 4$  and  $x^2 + y^2 + z^2 = 16$ .