

**Quiz #10; Wed, 4/6/2016**

**Math 53 with Prof. Stankova**

**Section 110; MWF12-1**

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**Student Name:** \_\_\_\_\_

*Problem.* Compute the volume of the solid enclosed by the plane  $z = 0$  and the paraboloid  $z = 4 - x^2 - y^2$ . (Hint: Use polar coordinates)

*Solution.*

$$\int_0^2 \int_0^{2\pi} (4 - r^2)r \, d\theta dr = (2\pi) \left[ 2r^2 - \frac{1}{3}r^3 \right]_0^2 = \frac{32\pi}{3}$$