Fake Quiz 1 Calc 3 10/16/2017

This is a fake quiz, this is *only* a fake quiz. In the event of an actual quiz, you'd have been given fair warning. Repeat: This is *only* a fake quiz.

1. Set up an iterated integral for the volume of the region bounded above the cone $z = \sqrt{x^2 + y^2}$ and below the top half of the sphere with radius 3 centered at the origin.

$$\int_0^{2\pi} \int_0^{3/\sqrt{2}} \int_r^{\sqrt{9-r^2}} 1r \, dz dr d\theta$$

2. Set up an iterated integral for the volume of the region inside $x^2 + y^2 = 3$ above $z = 0$ and below $z = 10 - x$.

$$\int_0^{2\pi} \int_0^{\sqrt{3}} \int_0^{10-r\cos\vartheta} 1r \, dz dr d\theta$$

3. Set up an iterated integral for the volume of the solid enclosed between $z = x^2 + y^2$ and $z = 8 - x^2 - y^2$.

$$\int_0^{2\pi} \int_0^{2} \int_{r^2}^{8-r^2} 1r \, dz dr d\theta$$

4. Set up an iterated integral for the volume of the tetrahedron with vertices (0,0,0), (4,0,0), (0,4,0), and (0,0,4).

$$\int_0^{4} \int_0^{4-x} \int_0^{4-x-y} 1 \, dz dy dx$$