

## Assignment Previewer

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## About this Assignment

Due: **Tue Apr 29 2008 00:00 PDT****1.** SCalcET5 15.8.002. [295253] [Show Details](#)

Sketch the solid whose volume is given by the integral. (Do this on paper. Your teacher may ask you to turn in this work.) Evaluate the integral.

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

**2.** SCalcET5 15.8.004. [295324] [Show Details](#)

Sketch the solid whose volume is given by the integral. (Do this on paper. Your teacher may ask you to turn in this work.) Evaluate the integral.

$$\int_0^{2\pi} \int_{\pi/2}^{\pi} \int_1^2 \rho^2 \sin(\phi) \, d\rho \, d\phi \, d\theta$$

**3.** SCalcET5 15.8.008. [295400] [Show Details](#)

Evaluate the following where  $E$  is the solid in the first octant that lies beneath the paraboloid  $z = 1 - x^2 - y^2$ .

$$\iiint_E x^3 + xy^2 \, dV$$

**4.** SCalcET5 15.8.013. [295351] [Show Details](#)

(a) Find the volume of the region  $E$  bounded by the paraboloids  $z = x^2 + y^2$  and  $z = 36 - 3x^2 - 3y^2$ .

(b) Find the centroid of the region  $E$  in part (a).

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**5.** SCalcET5 15.8.020. [349673] [Show Details](#)

Use spherical coordinates. Evaluate the following where  $E$  is the solid that lies between the spheres  $x^2 + y^2 + z^2 = 1$  and  $x^2 + y^2 + z^2 = 4$  in the first octant.

$$\int \int \int_E x e^{(x^2+y^2+z^2)^2} dV$$

**6.** HW4.1 [540839] [Show Details](#)

Let  $R$  be the icecream cone. This is the solid which is bounded above by the sphere  $x^2 + y^2 + z^2 = 4$  and below by the cone  $z^2 = x^2 + y^2$  for  $z \geq 0$ . Please find the volume of the cone by making two separate independent computations. First find the volume using spherical coordinates. Then find the volume using cylindrical coordinates. Your answers should agree!



(A numerical answer x.xxx is desired)

**7.** HW4.2 [540840] [Show Details](#)

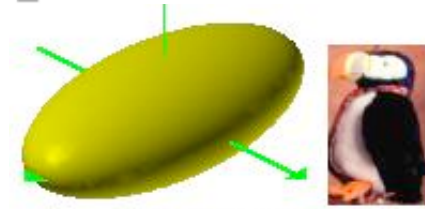
By making the change of variables  $u = 2x$  and  $v = 3y$ , find the area of the ellipse  $4x^2 + 9y^2 \leq 25$ .



(A numerical answer xx.x is desired)

**8.** HW4.3 [540841] [Show Details](#)

Find the volume of the ellipsoid  $4x^2 + 9y^2 + 16z^2 \leq 25$ .



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(A numerical answer xx.x is desired)

9. HW4.4 [540842] [Show Details](#)

$R$  is a neutron star - it is described in rectangular coordinates by the relation  $x^2 + y^2 + z^2 \leq 9$ . The mass density is given by  $\rho = \frac{1}{x^2 + y^2 + z^2}$ . Find the total mass of the Neutron Star



(A numerical answer xx.x is desired)

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