

**Section 15.6: Additional Problems**

1. Let  $B = [0, 1] \times [1, 3] \times [0, 2]$ . Evaluate

$$\iiint_B x(y + 2z) \, dV$$

2. Evaluate:  $\int_0^1 \int_x^{2x} \int_0^{x+y} 6xy \, dz \, dy \, dx$

3. Setup  $\iiint_E xy \, dV$  where  $V$  is the tetrahedron with vertices  $(0, 0, 0)$ ,  $(1, 0, 0)$ ,  $(0, 2, 0)$ , and  $(0, 0, 3)$ .

4. A solid  $E$  is enclosed by the paraboloids  $y = 3x^2 + 3z^2$  and  $y = 36 - x^2 - z^2$ . Evaluate  $\iiint_E x^2 \, dV$

5. Set up the integral that would compute the volume of the solid between the cylinders  $x^2 + z^2 = 4$  and  $x^2 + z^2 = 1$  and bounded by the planes  $y = x + 2$  and  $y = 0$ .

6. Rewrite the integral  $\int_0^1 \int_0^{2-2y} \int_0^{4-x^2} f(x, y, z) \, dz \, dx \, dy$  in the order of  $\mathbf{dy \, dx \, dz}$ .

7. Set up the integral that will find the mass of a solid. The solid is inside the cylinder  $x^2 + y^2 = 2y$ , under the surface  $z = 15 + 2x^2 + 2y^2$  and above the plane  $z = 3y$ . The density function of the solid is  $\rho(x, y) = y^2$