

## Calculus III, Worksheet #10

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1. Evaluate

$$\iiint (xy + z^2) dV$$

over the region  $D = \{ (x, y, z) \mid 0 \leq x \leq 2, 0 \leq y \leq 1, 0 \leq z \leq 3 \}$ .

2. Evaluate

$$\iiint_E e^{\frac{z}{y}} dV$$

where  $E = \{ (x, y, z) \mid 0 \leq y \leq 1, y \leq x \leq 1, 0 \leq z \leq xy \}$ .

3. Evaluate

$$\iiint_T x^2 dV$$

where  $T$  is the solid tetrahedron with vertices  $(0,0,0)$ ,  $(1,0,0)$ ,  $(0,1,0)$  and  $(0,0,1)$ .

4. Find the volume of the solid enclosed by the parabolas  $y = x^2 + z^2$  and the plane  $y = 8 - x^2 - z^2$ .

5. Write five other iterated integrals that are equal to the following iterated integral:

a.  $\int_0^1 \int_y^1 \int_0^y f(x, y, z) dz dx dy$

b.  $\int_0^1 \int_y^1 \int_0^z f(x, y, z) dy dx dz$ .