# Math 2471 Calc 3 - Homework #8

Pg. 1021, #3, 5, 13, 15, 19 and 23.

Pg. 1029-1030, #3, 7, 15, and 31.

Pg. 1021   Evaluate the following triple integrals

$$\#3 \quad \int_0^3 \int_0^2 \int_0^1 (x + y + z) \, dx \, dz \, dy$$

$$\#5 \quad \int_0^1 \int_0^x \int_0^{\sqrt{xy}} x \, dz \, dy \, dz$$

Pg. 1021   Set a triple integral for the volume of the following. Do not evaluate.

#13   The volume in the first octant bounded by the coordinate planes
and the plane $z = 7 - x - 2y$

#15   The solid bound by $z = 6 - x^2 - y^2$ and $z = 0$.

Pg. 1021   Use a triple integral for the volume of the following.

#19   $z = x, x = 4 - y^2, z = 0$ (the sketch is in the book)

#23   $z = 2 - y, z = 4 - y^2, x = 0, x = 3, y = 0$.

Pg. 1029   Evaluate the following triple integrals

$$\#3 \quad \int_{-1}^5 \int_0^{\pi/2} \int_0^3 r \cos\theta \, dr \, d\theta \, dz$$

$$\#7 \quad \int_0^{2\pi} \int_0^{\pi/2} \int_0^{\sin\phi} \rho \cos\phi \, d\rho \, d\phi \, d\theta$$

Pg. 1029   Use cylindrical coordinates to find the volume of the following.

#15   Inside both $x^2 + y^2 + z^2 = 36$ and $(x - 3)^2 + y^2 = 9$.

Pg. 1030   Use **cylindrical and spherical** coordinates to find the volume of the following.

#31   Inside $x^2 + y^2 + z^2 = 9$ and outside $z = \sqrt{x^2 + y^2}$ and above the $xy$ plane.

**Due:** Wednesday, July 13, 2022.