

Assignment 13

1. Evaluate the triple iterated integral.

$$(a) \int_0^1 \int_0^x \int_0^{\sqrt{xy}} x \, dz dy dx$$

$$(b) \int_0^{2\pi} \int_0^{\pi} \int_2^5 \rho^2 \sin \phi \, d\rho d\phi d\theta$$

2. Use a triple integral to find the volume of the solid bounded by the graphs of the equations.

$$z = \sqrt{x}, \quad y = x + 2, \quad y = x^2, \quad \text{first octant}$$

3. Use a change of variables to find the volume of the solid region lying below the surface $z = f(x, y)$ and above the plane region R .

$$f(x, y) = (x + y)e^{x-y}$$

R : region bounded by the square with vertices $(4, 0), (6, 2), (4, 4), (2, 2)$