

Math 13 Worksheet #1: Integrating over rectangular regions

- (1) Use the Midpoint Rule to estimate the volume of the solid that lies below the surface $z = xy$ and above the rectangle $R = \{(x, y) \mid 0 \leq x \leq 6, 0 \leq y \leq 4\}$. Let $m = 3$ and $n = 2$.

- (2) Calculate the iterated integral.

$$\int_0^1 \int_0^3 e^{x+3y} dx dy$$

- (3) Find the volume of the solid enclosed by the surface $z = 1 + e^x \sin y$ and planes $x = \pm 1$, $y = 0$, $y = \pi$, and $z = 0$.