

1. Find the volume below the surface  $z = 1 + x + y$  and above the rectangle  $R = \{(x, y) | 0 \leq x \leq 2, 0 \leq y \leq 3\}$  in the  $xy$ -plane.
2. Find the volume below the surface  $z = 1 + x + y$  and above the region  $R$  in the  $xy$ -plane bounded by the graphs  $x = 1, y = 0, y = x^2$ .
3. Find the volume below the surface  $z = e^{-x^2}$  and above the triangle  $R$  in the  $xy$ -plane bounded by the  $x$ -axis, the line  $x = 1$ , and the line  $y = x$ .
4. Evaluate  $\int_0^\pi \int_x^\pi \frac{\sin(y)}{y} dy dx$  by reversing the order of integration.
5. Find the volume of the first octant part of the solid bounded by the cylinders  $x^2 + y^2 = 1$  and  $y^2 + z^2 = 1$ .