

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