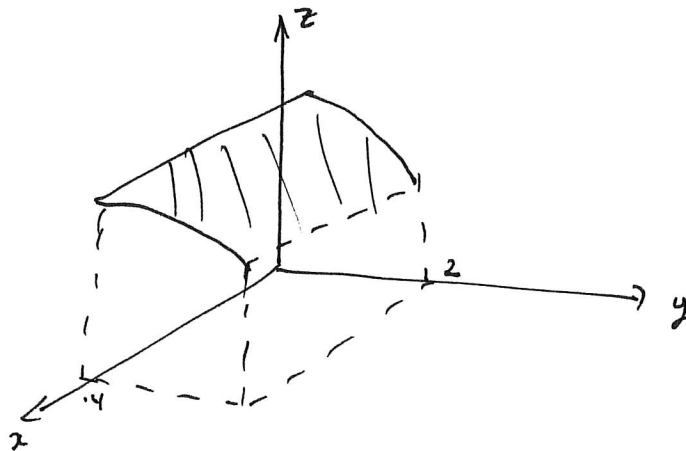


15.1

46. $V = 23.4375$

12. $z = \sqrt{9-y^2} \Rightarrow z^2 + y^2 = 9, z \geq 0$ so the integral represents

the top half of the part of the cylinder $z^2 + y^2 = 9$ above $[0,4] \times [0,2]$



20. $\frac{1}{2} \ln(3) (\ln 5)^2$

Note $\int_1^3 \int_1^5 \frac{\ln(y)}{y} \cdot \frac{1}{x} dy dx$ can be simplified as

$$\left(\int_1^3 \frac{1}{x} dx \right) \left(\int_1^5 \frac{\ln y}{y} dy \right)$$

26. $\frac{8}{\sqrt{15}} (2\sqrt{2} - 1)$