

3. Compute a Riemann sum for $f(x, y) = x + 2y^2$ on the region bounded by $0 \leq x \leq 2$ and $-1 \leq y \leq 1$. Use $n = 4$ and evaluate at the midpoint.

4. Find the center of mass for the lamina whose area is bounded by $x = y^2$ and $x = 1$. The lamina has a density function of $\rho(x, y) = y^2 + x + 1$.

5. Compute the average value of $f(x, y) = y^2$ on the region bounded by $y = x^2$ and $y = 4$

6. Use an appropriate coordinate system to compute the volume of the solid bounded above by the cone $z = \sqrt{x^2 + y^2}$, below by the plane $z = 0$ and contained inside the cylinder $x^2 + y^2 = 4$.