

Math 2450.H01, In Class Homework # 6

Due: Thursday, October 22

1. Evaluate the integral $\iint_D (2x - y) dA$, where the region D is bounded by the lines $y = x$ and $y = x^2$.

2. Find the volume of the region bounded above by the paraboloid $z = 18 - x^2 - y^2$ and below by the plane $z = 2$. Use polar coordinates to evaluate the integral.

3. Change the order of integration, then evaluate the integral $\int_0^1 \int_{\sqrt{y}}^1 \sqrt{9 - x^3} dx dy$.

4. The formula for surface area is $S = \iint_R \sqrt{(f_x)^2 + (f_y)^2 + 1} dA$. Find the surface area of the plane $2x - 7y - z = 10$ that lies inside the cylinder $x^2 + y^2 = 9$.