

Tutorial Worksheet

Show all your work.

1. Compute $\int_C x^2 ds$, C is the intersection of the surface $x^2 + y^2 + z^2 = 4$ and the plane $z = \sqrt{3}$.

2. Evaluate $\int_C \sin(\pi y) dy + yx^2 dx$ where C is the line segment from $(1, 4)$ to $(0, 2)$.

3. Let R be the region bounded by the ellipse $16x^2 + 4y^2 = 16$. Evaluate the integral $\int \int_R 2y dA$. [**Hint:** Use the transformation $x = u\cos(v)$, $y = 2u\sin(v)$.]

4. Let R be the parallelogram between the lines $2x - y = 3$, $2x - y = 5$, $x + y = -1$, and $x + y = 1$. Evaluate the integral $\int \int_R e^{2x-y} dA$.