

Math 53 Discussion

Practice Problems: 15.4, double integrals in polars

1) By converting to polar coordinates, find $\iint_R \sin(x^2 + y^2) dA$, where R = region in the first quadrant between the circles with center the origin and radii 1 and 3.

2) Find the volume of the solid lying under the cone $z = \sqrt{x^2 + y^2}$, above the xy -plane and inside the cylinder $x^2 + y^2 = 2y$.

3) Find the volume of a sphere of radius a using polar coordinates.

4*) Find $\int_{-\infty}^{\infty} e^{-x^2} dx$.