

1 | Evaluating a Cylindrical Integral

Considering the function:

$$f(x, y, z) = \sqrt{x^2 + y^2} \quad (1)$$

To evaluate the integral, we will convert it to cylindrical coordinates. We note first that the integral is to be evaluated inside the cylinder of $x^2 + y^2 = 16$, which means that we wish to evaluate it in a circle with center at the origin with radius 4.

Furthermore, we understand that the bounds of the function are to be evaluated between $[-5, -4]$.