

## 1 | Jacobian Determinant for Polar

We are to determine (pun not intended) the polar correction factor for a double integral,  $dA = r \, dr \, d\theta$ .

To do this, we will have to first figure the change of bases expressions such that we can take:

$$f(x, y) = g(r, \theta) \tag{1}$$

Fortunately, this is already derived to use from before.

$$\begin{cases} x = r \cos \theta \\ y = r \sin \theta \end{cases} \tag{2}$$