

## Exercise 6

Compute  $\int_0^\infty e^{-x^2} dx$ . (*Hint:* This is a function that *cannot* be integrated by formula. So use the following trick. Transform the double integral  $\int_0^\infty e^{-x^2} dx \cdot \int_0^\infty e^{-y^2} dy$  into polar coordinates and you'll end up with a function that can be integrated easily.)