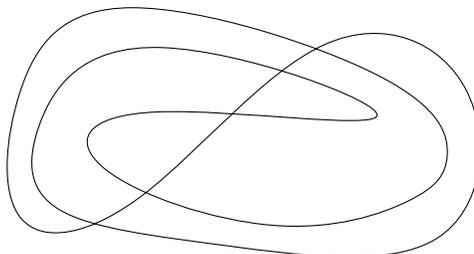


Comprehension questions

PROBLEM 13.1. Show that there are (a, b) such that $a = e^{-a^2-b^2} \cos(a)$, $b = e^{-a^2-b^2} \sin(a)$.

PROBLEM 13.2. Suppose that $d(t) = F(\cos(t), \sin(t))$ looks like this (with $d(t)$ going once around the loop I've drawn, you can choose which of the two directions you think it's going):



In the picture above, color in the regions consisting of those (x, y) for which we know that there is some (a, b) with $a^2 + b^2 < 1$, such that $F(a, b) = (x, y)$.

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18.900 Geometry and Topology in the Plane
Spring 2023

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