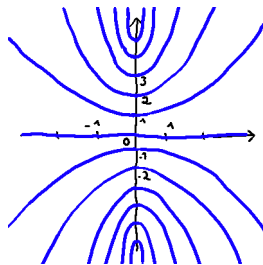
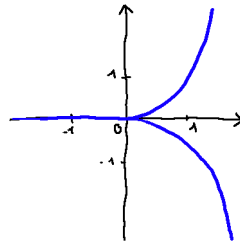


Differential geometry - homework

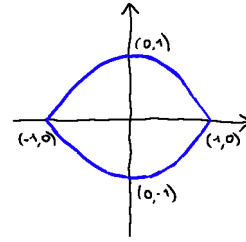
- Say which drawings represent C^1 -submanifolds of \mathbb{R}^2 (or \mathbb{R}^3). For each drawing which does not, indicate the “problematic” points (i.e. close to which the definition of submanifolds fails to be satisfied).



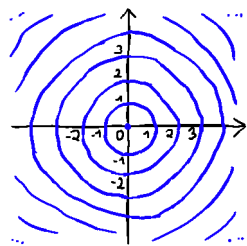
(a)



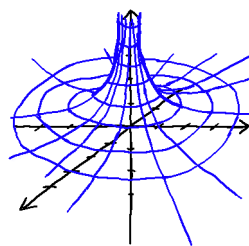
(b)



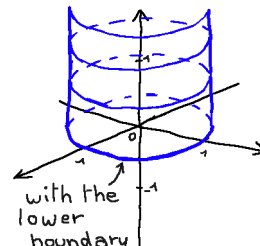
(c)



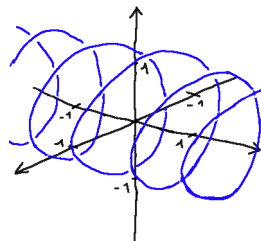
(d)



(e)



(f)



(g)

- Choose one of the pictures representing a submanifold. Give a formal definition of a set which looks like the picture. Prove that it is a C^1 -submanifold of \mathbb{R}^n .
- Choose one of the pictures which does not represent a submanifold. Give a formal definition of a set which looks like the picture. Prove that it is not a C^1 -submanifold of \mathbb{R}^n .