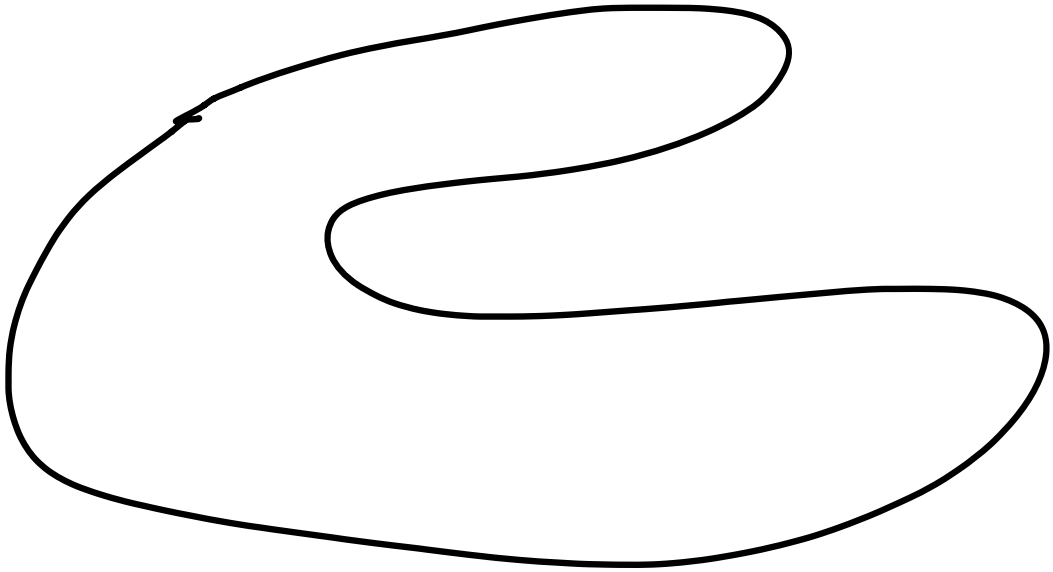
Grage - Hamilton:

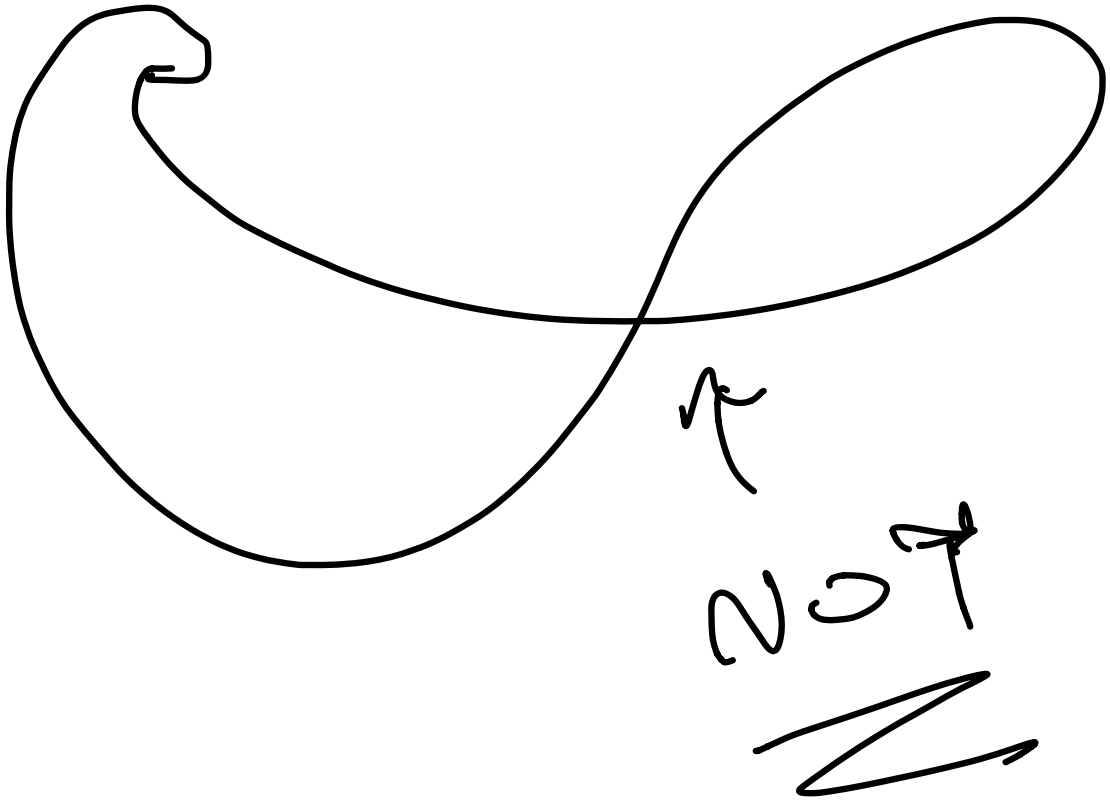
Cvx simple closed curve $\subset \mathbb{R}^2 \Rightarrow$

"Disappears at a round point"

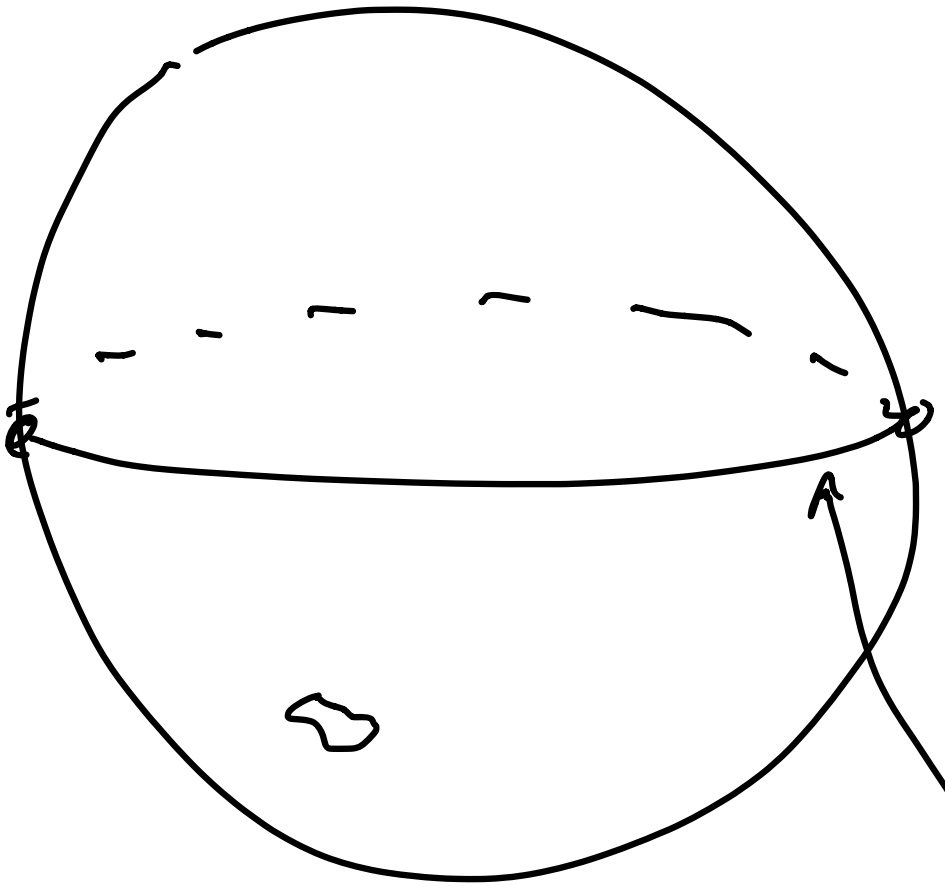
Grayson: Any closed simple curve becomes CVX



Simple



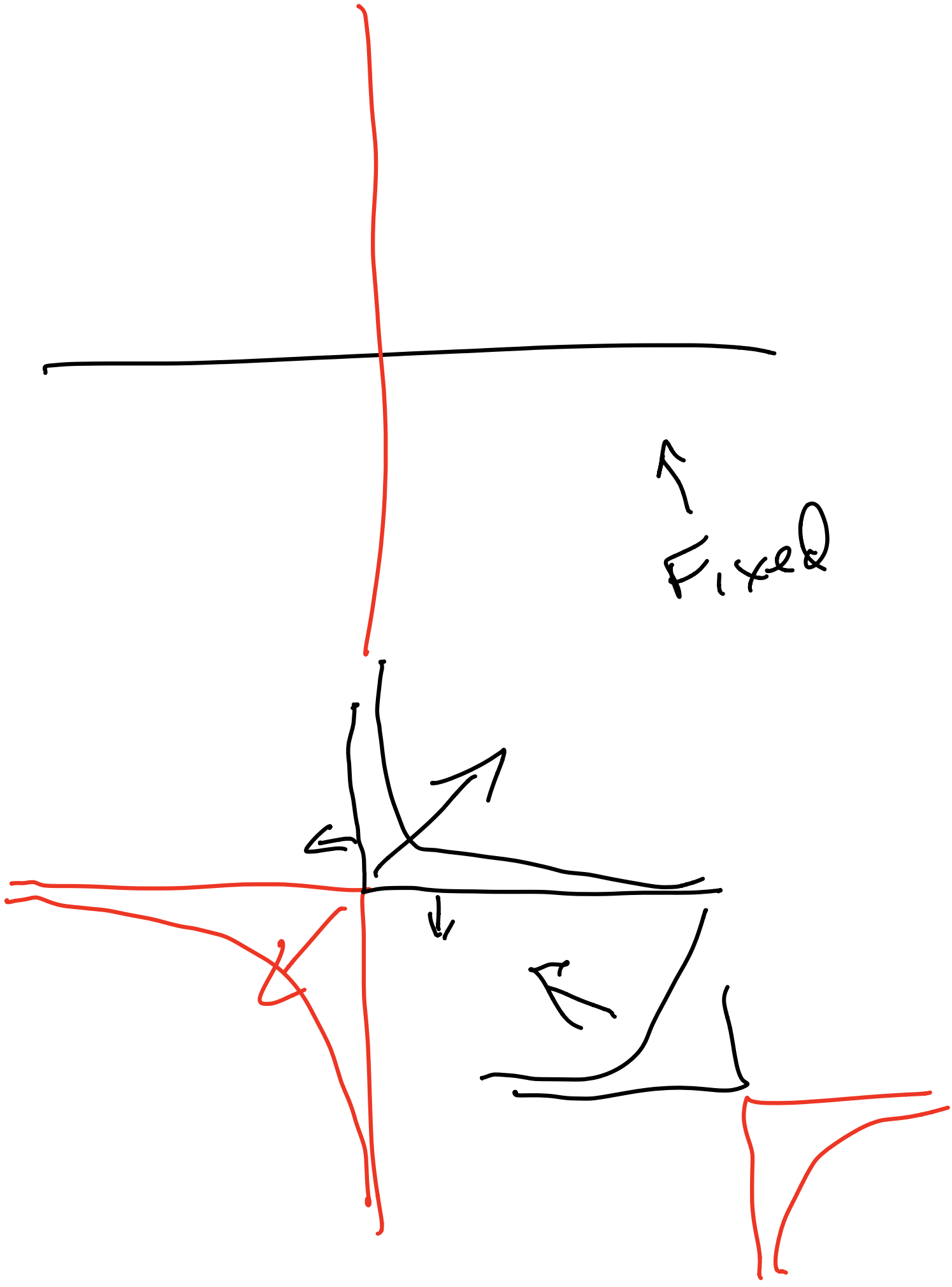
NOT

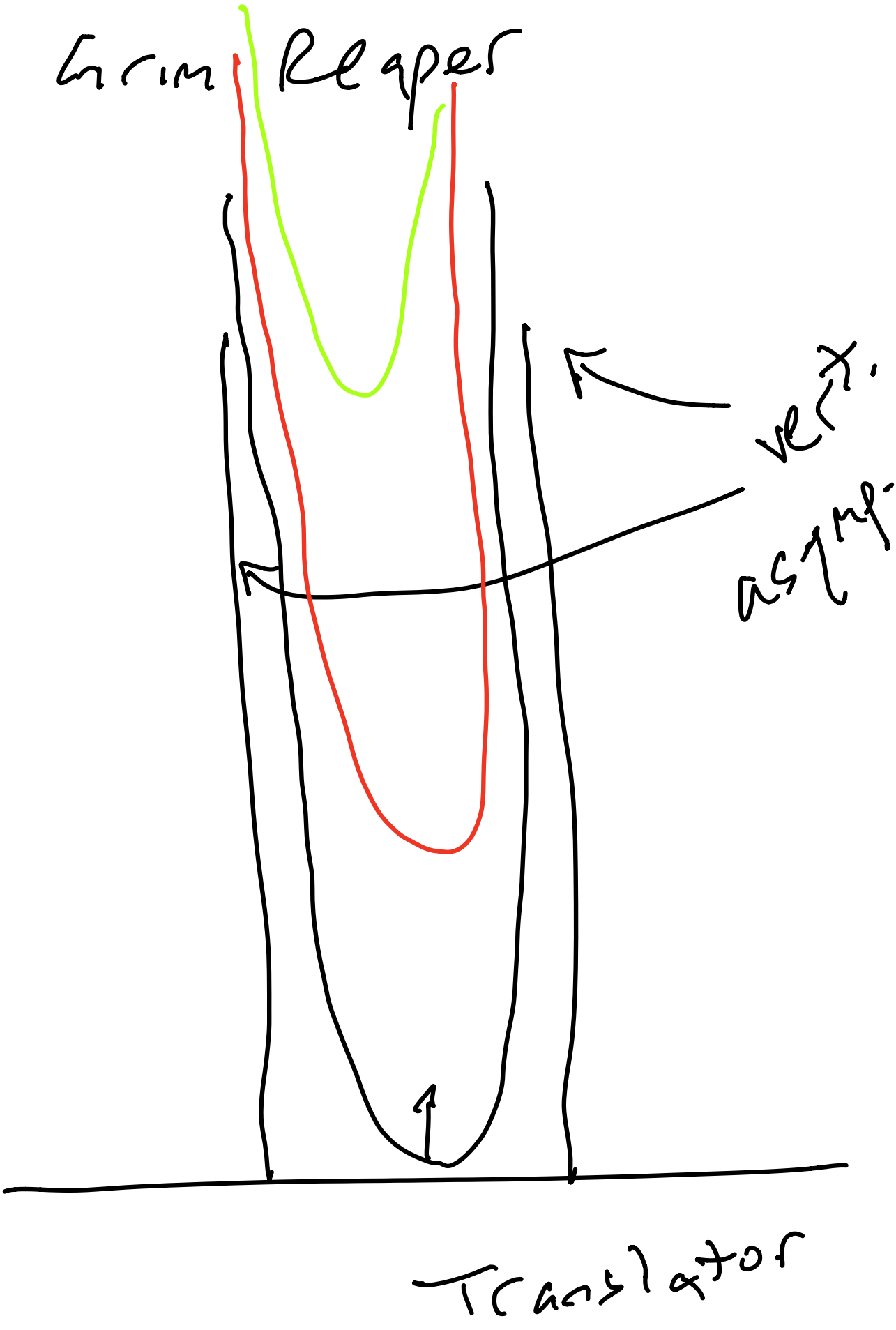


simple closed
in S^2 $\Rightarrow$)

2 pass:

- Disappear at round p^+
- Go to an equator


Fixed


Grim Reaper
vert. asymp.
Translator

How to define soln if curve isn't smooth?

Level Set Flow.

Smooth curve can be param'd

$\langle \cos s, \sin s \rangle$

$s : 0 \to 2\pi$

Level set

$u(x,y) = x^2 + y^2$

$u = 1$ specifies the circle

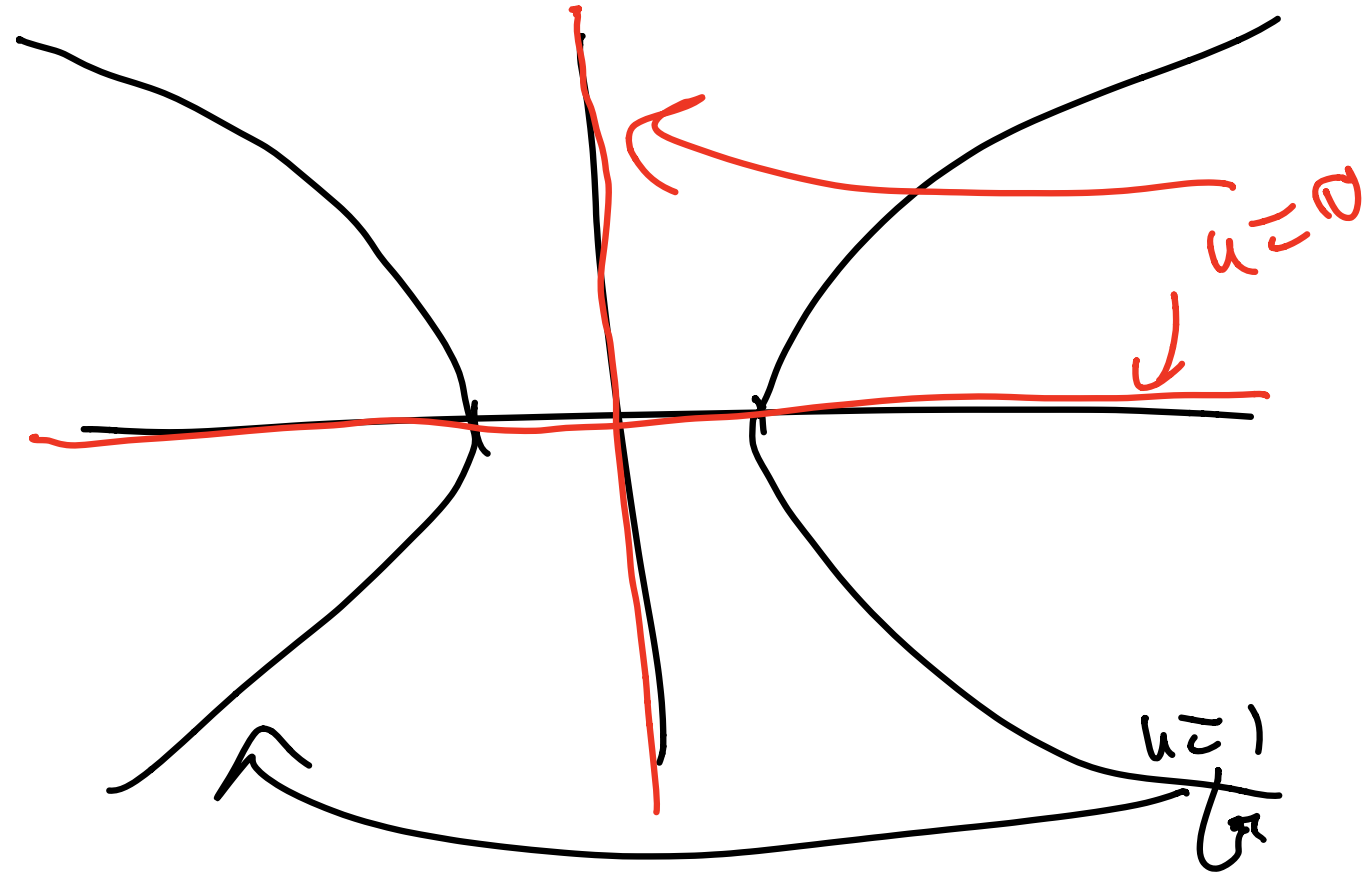
$u = c$ if $\nabla u \neq 0$ here

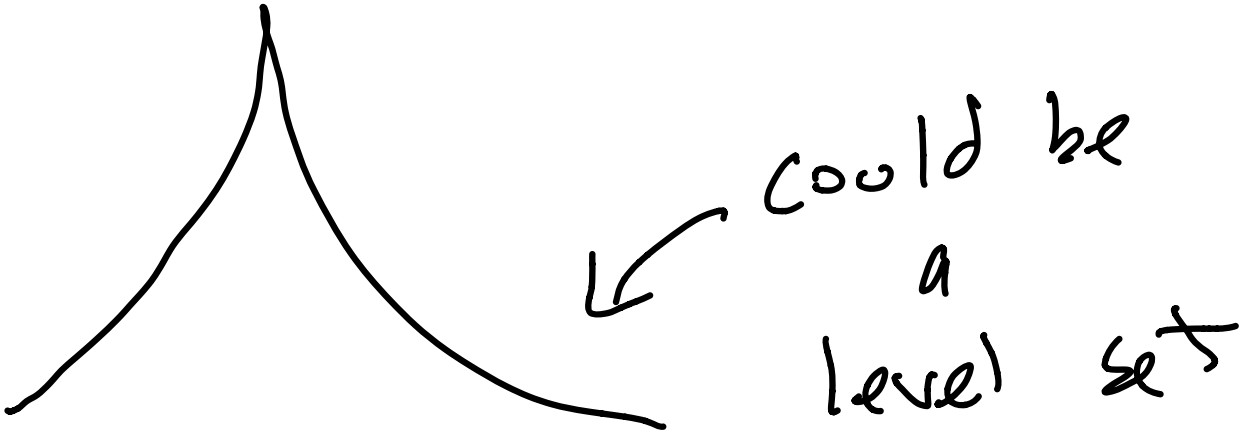
Imp. Fn Th'm $\Rightarrow$ smooth curve.

$u(x,y) = x^2 - y^2$

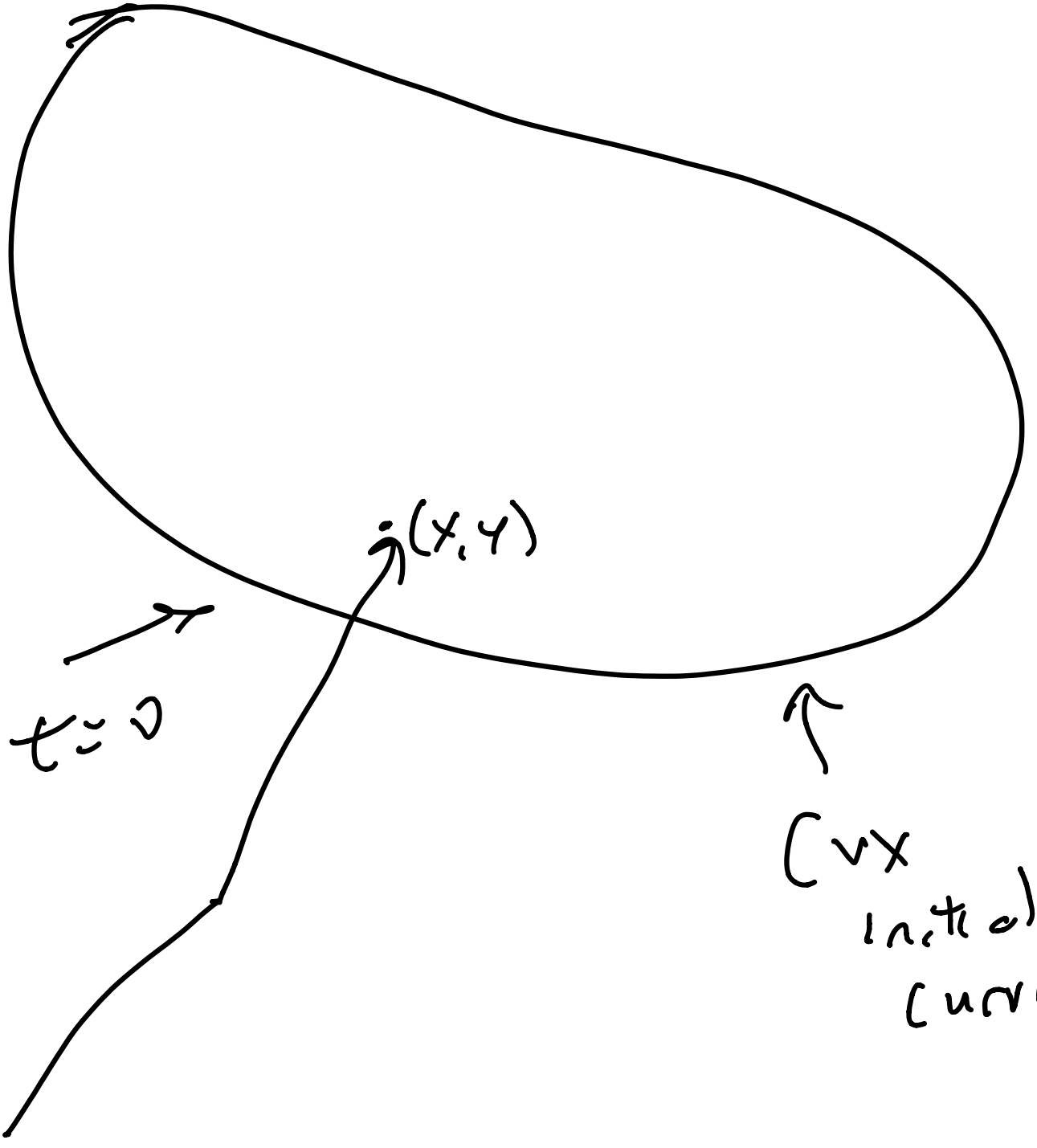
$u = 1 \qquad x^2 - y^2 = 1$

$\nabla u = (2x, -2y)$


u = 0
u = 1


could be
a
level set

Arrival time :



$u(x,y)$ = time when curve hits (x,y)

"Arrival time"