Devious proof of T.E.

- I claim that K is a fn of g_{ij} and derivatives only
- rotation and translation cannot change this property
- we have seen K is invar. to reparam.

$\Rightarrow$ OK to work in "good" frame w/ "good" param

- at Point of interest, $N=(0,0,1)$, $\underline{x}=(0,0,0)$

Surf is $\underline{x}(u,v)=(u, v, f(u,v))$

$$\therefore \quad g = \begin{pmatrix} 1+f_u^2 & f_u f_v \\ f_u f_v & 1+f_v^2 \end{pmatrix} \qquad \text{AND} \quad f_x, f_y = 0 \text{ at } u$$

NOW we can't write $\boxed{\sqrt{g_{11}-1} = f_{xx}}$

WRONG

because at 0,0, $f_x = 0$ and we don't know how the sign changes