

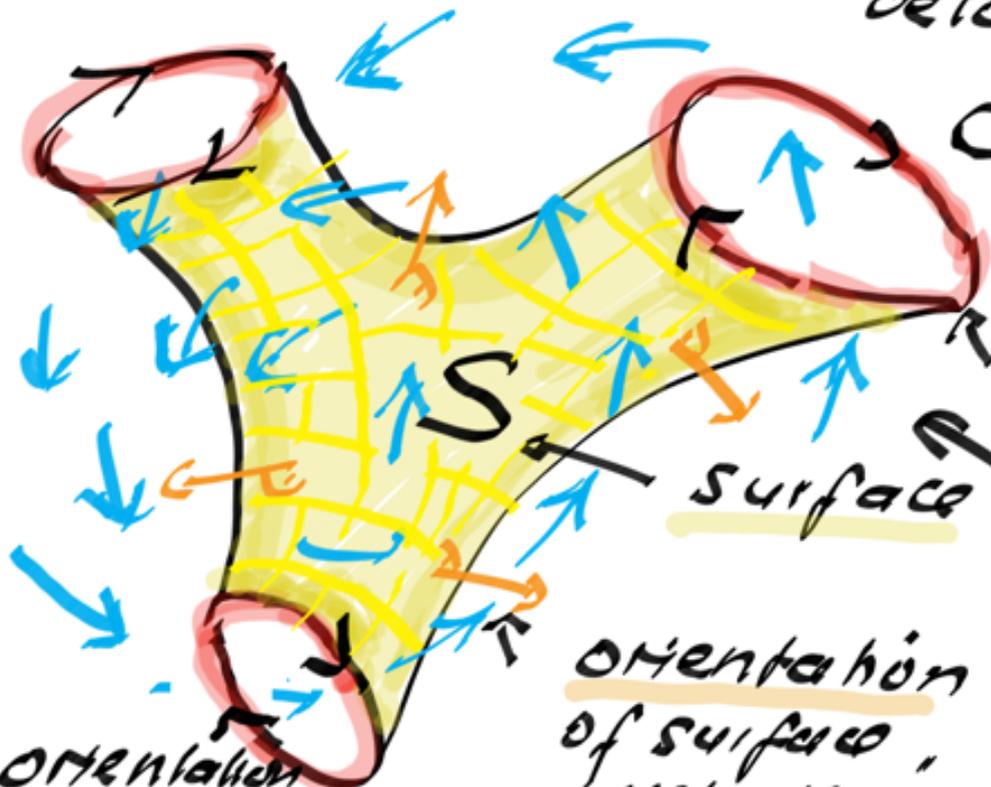
grid curves

vector field

velocity of fluid



boundary
end of the world

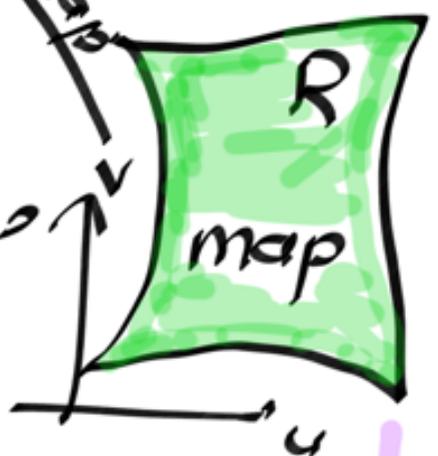


surface

orientation
of surface
what's "up"?

orientation
of boundary
surface is to the left.

u map



Stokes theorem

$$\iint_R \text{curl}(\vec{F})(\vec{r}(u,v)) \cdot \vec{r}_u \times \vec{r}_v \, du \, dv$$

Flux of the curl

$$= \int_a^b \vec{F}(\vec{r}(t)) \cdot \vec{r}'(t) \, dt$$

work done along
boundary