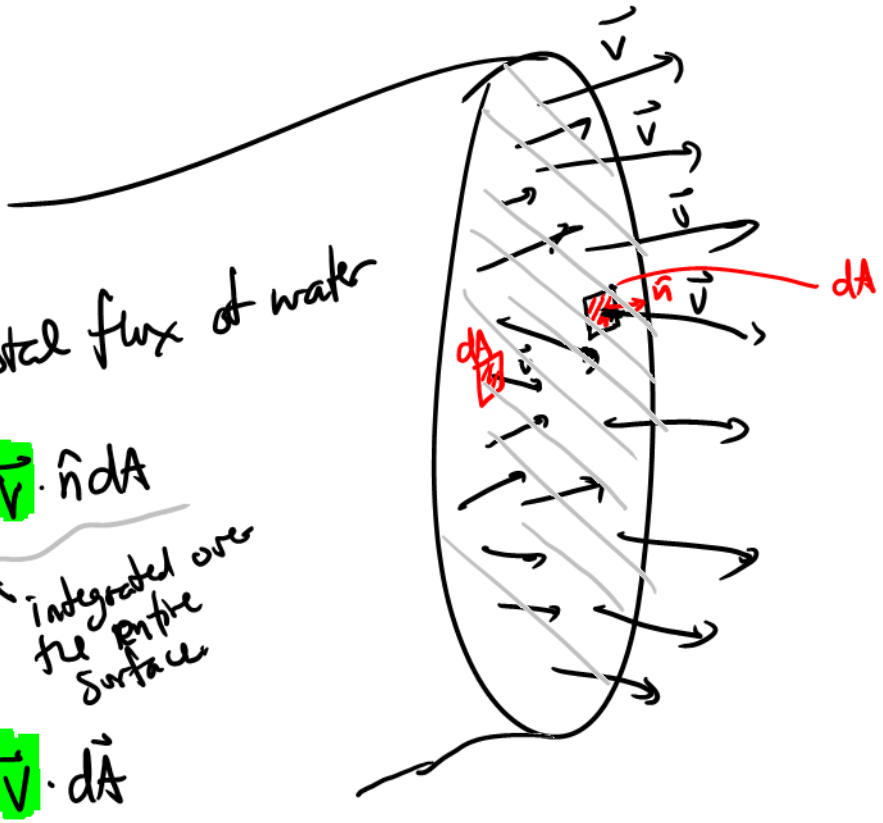


total flux of water

$\int \vec{V} \cdot \hat{n} \, dA$

integrated over the entire surface

$\int \vec{V} \cdot d\vec{A}$

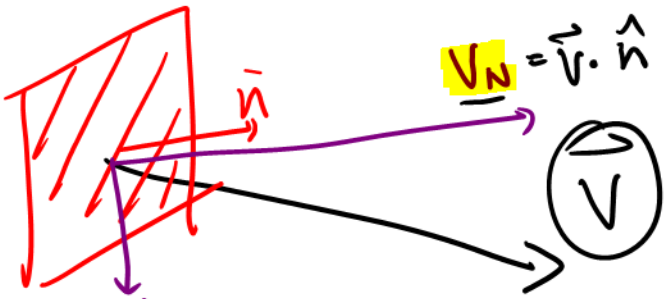
direction of $d\vec{A}$ is the normal vector.

$\hat{n}$ normal vector (perpendicular)

flux of water through dA

$\vec{V} \cdot \hat{n} \, dA$

only the normal component of velocity is "coming out" of the hose.



$V_N = \vec{V} \cdot \hat{n}$

$V_\perp$

flows $\parallel$ to the surface but not "out of" the service

→ $\vec{V}$ is just a vector field

↳ can calculate fluxes of every kind of vector.

↳ momentum

↳ bananas!