

$t \rightarrow 0$ no flux thru side

⊙ Gauss's
 $\int \vec{E} \cdot d\vec{a}$

⊙

⊙
 \vec{E}

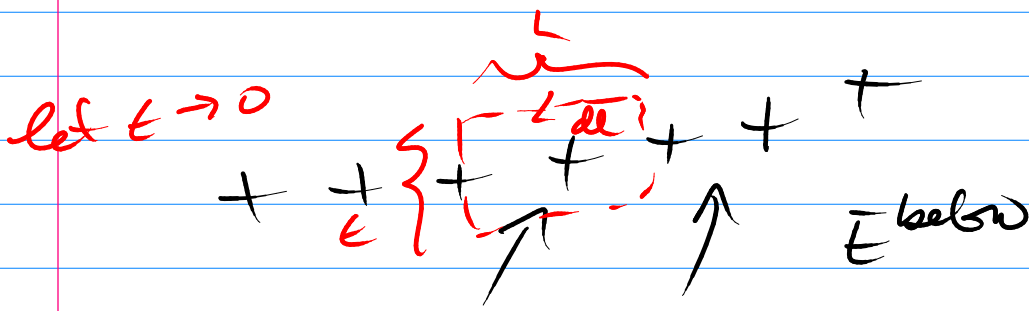
$$\vec{E}^{\text{above}} \cdot da \hat{n} - \vec{E}^{\text{below}} \cdot da \hat{n} = \frac{\nabla \cdot da}{\epsilon_0}$$


$$E_{\perp}^{\text{above}} - E_{\perp}^{\text{below}} = \frac{\sigma}{\epsilon_0}$$

↑ given

Also know $\vec{\nabla} \times \vec{E} = 0$

$$\oint \vec{E} \cdot d\vec{\ell} = 0$$





$$\vec{E}^{\text{above}} \cdot d\vec{l} = E_{\parallel}^{\text{above}}$$

$$E_{\parallel}^{\text{above}} - E_{\parallel}^{\text{below}} = 0$$

\vec{E}^{below} is \uparrow given: $E_{\perp}^{\text{below}} \neq E_{\parallel}^{\text{below}}$