

# Electric Field of Oppositely Charged Infinite Sheets



- Consider two infinite sheets of charge with charge per unit area  $\pm\sigma$ , respectively.
- The sheets are positioned at  $x = 0$  and  $x = 2\text{m}$ , respectively.
- Magnitude of field produced by each sheet:  $E = \frac{\sigma}{2\epsilon_0}$ .
- Electric field at  $x < 0$ :  $E_x = E_x^{(+)} + E_x^{(-)} = -\frac{\sigma}{2\epsilon_0} + \frac{\sigma}{2\epsilon_0} = 0$ .
- Electric field at  $0 < x < 2\text{m}$ :  $E_x = E_x^{(+)} + E_x^{(-)} = +\frac{\sigma}{2\epsilon_0} + \frac{\sigma}{2\epsilon_0} = \frac{\sigma}{\epsilon_0}$ .
- Electric field at  $x > 2\text{m}$ :  $E_x = E_x^{(+)} + E_x^{(-)} = +\frac{\sigma}{2\epsilon_0} - \frac{\sigma}{2\epsilon_0} = 0$ .

