

Special Problem 5-4.1

1. Two **parallel conducting plates** are located at plane $z = 0$ and at plane $z = -1$.
2. The plate located at $z = -1$ has an **electric potential** of $(13/12)$ V.
3. The plate located at $z = 0$ has an **electric potential** of 0 V.
4. The region between the plates is **filled with charge**. The **density** of this charge is:

$$\rho_v(\bar{r}) = \epsilon_0 z^2 \left[\frac{\text{Coulombs}}{\text{m}^2} \right]$$

Find the **electric potential function** $V(z)$ for the region between the plates.

Determine the **electric field** in the region between the plates.