

**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.