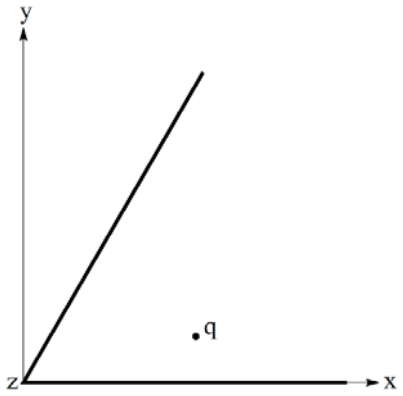
The figure shows two semi-infinite grounded conducting planes meeting along the z-axis. The angle between them is 60 ° . A positive point charge is located at $(s, \phi, z) = (0.5, 15\,°, 0)$. Take $q = 4\pi\epsilon_0$.



Use Mathematica to

- show in the same plot a plot of the point charge and the contours of the electric potential between the conducting plates in the x-y plane that is z =0 in the range $-0.1 \geq x \geq 1$ and range $-0.1 \geq y \geq 1$. Use the following options in your CountorPlot: ContourShading -> None, ContourLabels -> All, and Contours -> {0, .5, 1, 1.5, 2, 2.5, 3, 3.5, 4}
- show the contours of the electric potential between the conducting plates in a plane parallel to the x-y plane at z =1 in the range $-0.1 \geq x \geq 1$ and range $-0.1 \geq y \geq 1$. Use the following options in your CountorPlot: ContourShading -> None, ContourLabels -> All, and Contours -> Table[0.1 i, {i, 0, 0.3, .03}].
- show in the same plot a plot of the point charge and the contours of the electric potential and the streamlines of the electric field between the plates in the x-y plane in the range $-0.1 \geq x \geq 1$ and range $-0.1 \geq y \geq 1$. Use the same options of step 1.
- Comment on the direction of the electric field at the conducting plates.