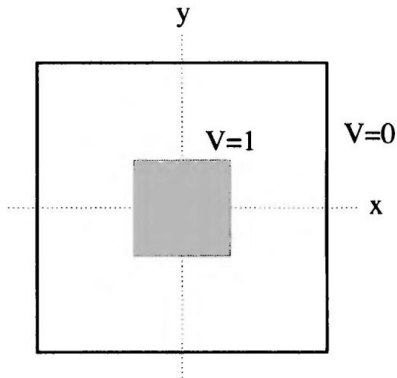


## Homework assignment 5

5.1

Figure 5.4. It is an infinitely long, hollow prism, with metallic walls and a square cross-section. Inside this prism is a metal bar, also with a square cross-section. We assume that a voltage is applied between the bar and the outer walls, and we want to calculate the potential in the space between them. show the equipotential contours and the corresponding electric field



5.2

Extend our treatment of a point charge in a metal box to deal with the case in which the charge is located near one face of the box. Study how the equipotential contours are affected by the proximity of a grounded surface (the face of the box).

5.3

Calculate the value of  $\pi$  by using both numerical integration you have learned (i.e. trapezoid and Simpson's methods) to estimate the area of a circle of unit radius. Observe how your estimate approaches the exact values of 3.1415926 ...) as the grid size in the integration is reduced.