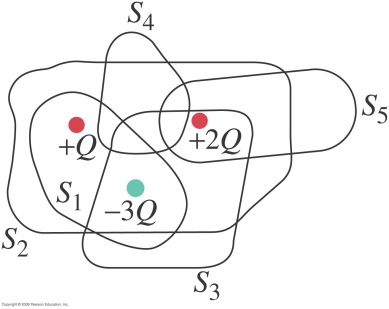
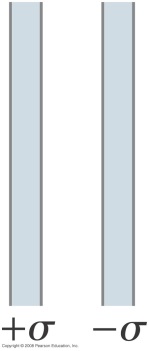
1. (I) A uniform electric field of magnitude 5.8 passes through a circle of radius   
   13 cm. What is the electric flux through the circle when its face is (*a*) perpendicular to the field lines, (*b*) at 45° to the field lines, and (*c*) parallel to the field lines?

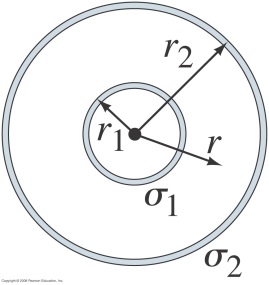
**6.** (I) Figure 22–26 shows five closed surfaces that surround various charges in a plane, as indicated. Determine the electric flux through each surface,  and  The surfaces are flat “pillbox” surfaces that extend only slightly above and below the plane in which the charges lie.

****

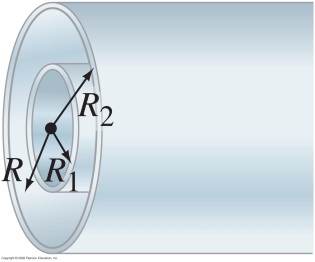
**24.** (II) Two large, flat metal plates are separated by a distance that is very small compared to their height and width. The conductors are given equal but opposite uniform surface charge densities Ignore edge effects and use Gauss’s law to show (*a*) that for points far from the edges, the electric field between the plates is E= and (*b*) that outside the plates on either side the field is zero. (*c*) How would your results be altered if the two plates were nonconductors? (See Fig. 22–30).

****

**27.** (II) Two thin concentric spherical shells of radii  and   contain uniform surface charge densities and respectively (see Fig. 22–31). Determine the electric field for (*a*)  (*b*)  and (*c*)  (*d*) Under what conditions will  for  (*e*) Under what conditions will  for  Neglect the thickness of the shells.

****

**35.** (II) A thin cylindrical shell of radius  is surrounded by a second concentric cylindrical shell of radius  (Fig. 22–35). The inner shell has a total charge and the outer shell Assuming the length  of the shells is much greater than  or  determine the electric field as a function of *R* (the perpendicular distance from the common axis of the cylinders) for (*a*)  (*b*)  and (*c*)  (*d*) What is the kinetic energy of an electron if it moves between (and concentric with) the shells in a circular orbit of radius  Neglect thickness of shells.

****