3-10 The circular arc of radius a shown in Figure 3-7 lies in the xy plane and has a constant linear charge density λ and center of curvature at the origin. Find $\mathbf{E}$ at an arbitrary point on the z axis. Show that when the curve is a complete circle your answer becomes

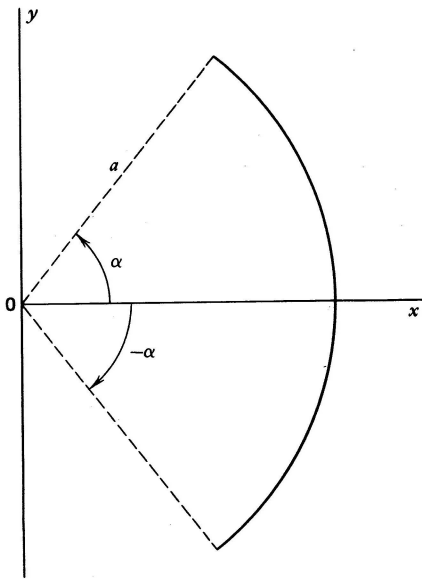$$\mathbf{E} = \frac{\lambda a z \hat{\mathbf{z}}}{2\epsilon_0 (a^2 + z^2)^{3/2}}$$

Figure 3-7. The circular arc of charge of Exercise 3-10.