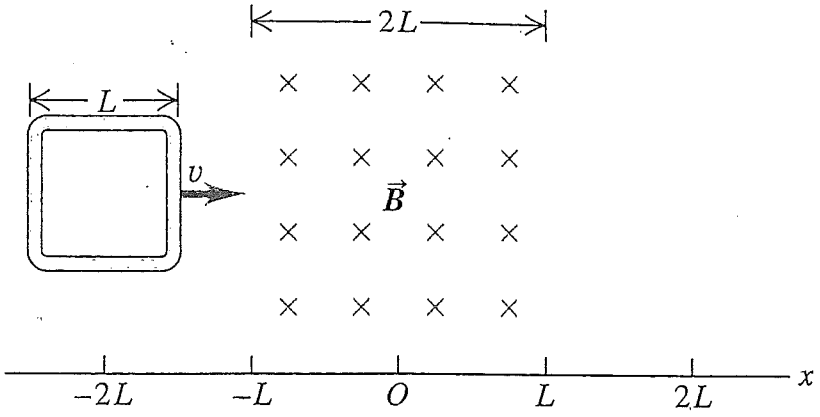
29.26. A square loop of wire with side length L and resistance R is moved at constant speed v across a uniform magnetic field confined to a square region whose sides are twice the length of those of the square loop (Fig. 29.39). (a) Graph the external force F needed to move the loop at constant speed as a function of the coordinate x from $x = -2L$ to $x = +2L$. (The coordinate x is measured from the center of the magnetic-field region to the center of the loop. It is negative when the center of the loop is to the left

Figure **29.39** Exercise 29.26.



of the center of the magnetic-field region. Take positive force to be to the right.) (b) Graph the induced current in the loop as a function of x. Take counterclockwise currents to be positive.

29.27. A 1.41-m bar moves through a ... Figure 29.40

29.46. A flat coil is oriented with the plane of its area at right angles to a spatially uniform magnetic field. The magnitude of this field varies with time according to the graph in Fig. 29.42. Sketch a qualitative (but accurate!) graph of the emf induced in the coil as a function of time. Be sure to identify the times t_1, t_2, and t_3 on your graph.

Figure **29.42** Problem 29.46.