



**FIGURE 6.1.** In each panel 100 pairs  $x_i, y_i$  are generated at random from the blue curve with Gaussian errors:  $Y = \sin(4X) + \varepsilon$ ,  $X \sim U[0, 1]$ ,  $\varepsilon \sim N(0, 1/3)$ . In the left panel the green curve is the result of a 30-nearest-neighbor running-mean smoother. The red point is the fitted constant  $\hat{f}(x_0)$ , and the red circles indicate those observations contributing to the fit at  $x_0$ . The solid yellow region indicates the weights assigned to observations. In the right panel, the green curve is the kernel-weighted average, using an Epanechnikov kernel with (half) window width  $\lambda = 0.2$ .