



FIGURE 28.26. The diffusion approximation is derived using a Taylor's series (Box 28.6). The *red curve* shows the distribution of fluctuations, $f(y)$, and the *blue curve* shows the probability distribution $\psi(x)$. If the distribution of fluctuations is narrow, then the distribution can be approximated by a quadratic curve

$$\psi_t(x) - y \frac{d\psi_t}{dx} + \frac{y^2}{2} \frac{d^2\psi_t}{dx^2} \dots$$

shown by the dotted line.