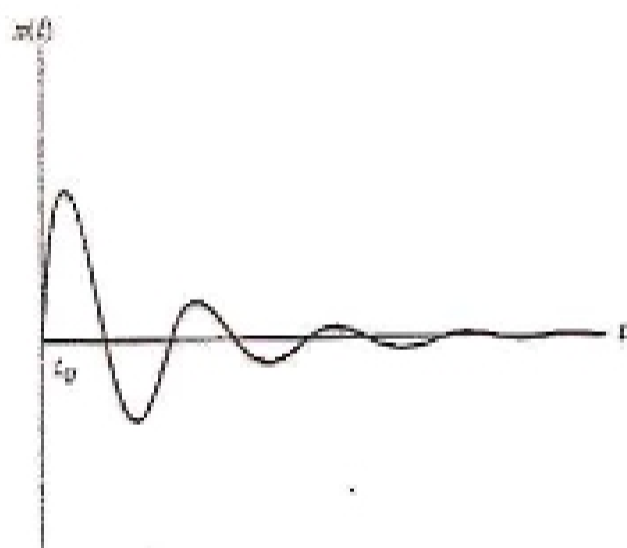
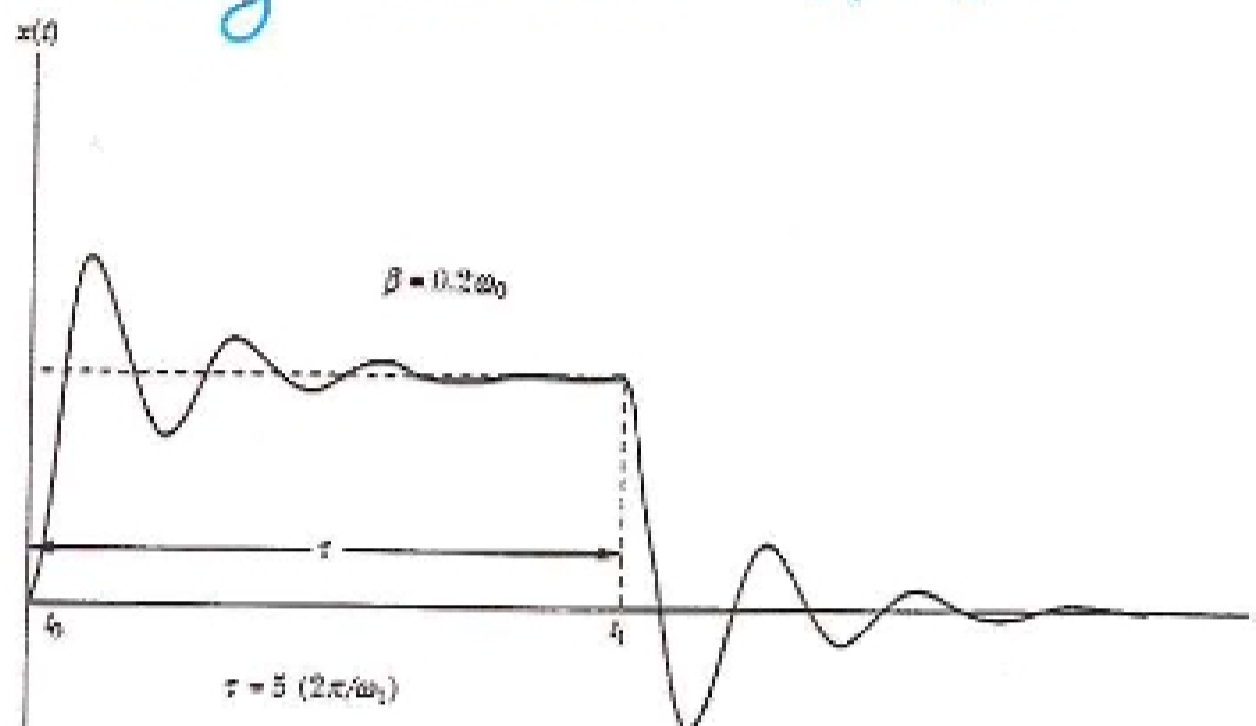


FIGURE 3-25 An arbitrary force function can be represented as a series of impulses, a method known as Green's methods.

Green's Method

Response of oscillator to a "top-hat" driving function $\frac{1}{m}F(t)$:



Response to an infinitely narrow top hat of unit area (infinitely tall).

$$G(t, t') = \begin{cases} \frac{1}{m\omega_1} e^{-\beta(t-t')} \sin \omega_1(t-t'), & t \geq t' \\ 0, & t < t' \end{cases} \quad (3.116)$$

Then, because

$$m\ddot{a}(t') = F(t') \quad (3.117)$$

we have

$$x(t) = \int_{-\infty}^t F(t') G(t, t') dt' \quad (3.118)$$