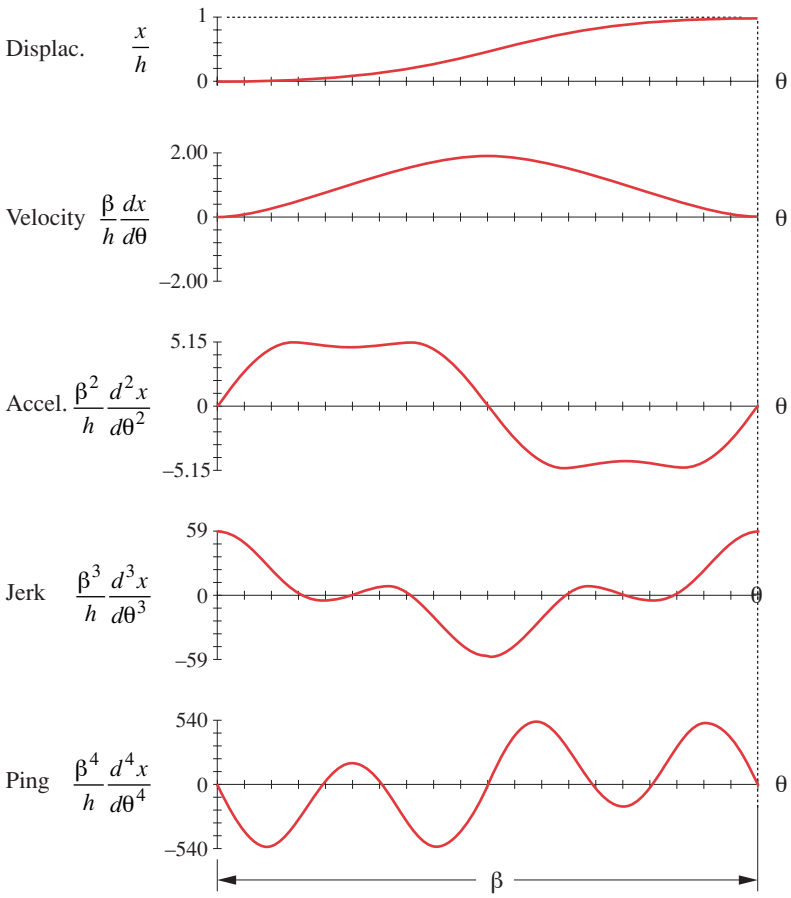

FIGURE 11-4

The Gutman F3 harmonic function for double-dwell motion

$$\ddot{X} + 2\zeta(2\pi\lambda)\dot{X} + (2\pi\lambda)^2 X = (2\pi\lambda)^2 S \tag{11.7}$$

where:

$X = x/h$ $h =$ maximum follower displacement (length)

$S = s/h_c$ $h_c =$ maximum cam displacement (length)

$\zeta =$ damping ratio $= c/(2m\omega_n)$

$\omega_n = \sqrt{(k_1 + k_2)/m}$

$t =$ time (sec)

$T_n = 1/w_n$ fundamental period of vibration of follower system (sec)

$T_r =$ rise (or fall) time of cam (sec)

$\lambda = T_r/T_n$ ratio of rise time to fundamental vibration period

$\tau = t/T_r$ dimensionless time