Suppose $a = 0$ in Eq. (6.59).
What type of response will $x(t)$ have in that case?

If $a = 0$, then the damping coefficient $\alpha = 0$, in which case the response is oscillatory, and with no damping:

$$x(t) = D_1 \cos \omega_0 t + D_2 \sin \omega_0 t + x(\infty).$$