

Derive the response of a viscously damped single-degree-of-freedom system to the force  $F(t) = F_0 e^{-\alpha t} \omega(t)$  by means of the convolution integral. Plot the response for the system parameters  $m = 12 \text{ kg}$ ,  $c = 24 \text{ N} \cdot \text{s/m}$ ,  $k = 4,800 \text{ N/m}$  and the force parameters  $F_0 = 200 \text{ N}$ ,  $\alpha = 1$ .