

#Jenny



Finally I get this ebook, thanks for all these I can get now!

#Rio



Cool! I'am really happy

#Markus Jensen



I did not think that this would work, my best friend showed me this website, and it does! I get my most wanted eBook

#Hun Tsu



wtf this great ebook for free?!

#Che Salsa



My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler



so many fake sites. this is the first one which worked! Many thanks

1.41 Plot $x(t)$ for a damped system of natural frequency $\omega_n = 2 \text{ rad/s}$ and initial conditions $x_0 = 1 \text{ mm}$, $\dot{x}_0 = 1 \text{ mm/s}$, for the following values of the damping ratio: $\zeta = 0.01$, $\zeta = 0.2$, $\zeta = 0.1$, $\zeta = 0.4$, and $\zeta = 0.8$.

Solution:

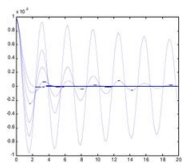
Given: $\omega_n = 2 \text{ rad/s}$, $x_0 = 1 \text{ mm}$, $\dot{x}_0 = 1 \text{ mm/s}$, $\zeta = [0.01, 0.2, 0.1, 0.4, 0.8]$
Underdamped case:

$$\therefore \omega_d = \omega_n \sqrt{1 - \zeta^2}$$

From equation 1.38,

$$A = \sqrt{\frac{(\dot{x}_0 + \zeta \omega_n x_0)^2 + (\omega_d x_0)^2}{\omega_d^2}} \quad \phi = \tan^{-1} \frac{\zeta \omega_n x_0}{\dot{x}_0 + \zeta \omega_n x_0}$$

The response is plotted for each value of the damping ratio in the following using Matlab:



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