

EE/EET 2240  
**Homework Problem #058**

A certain physical system is described by the 2<sup>nd</sup>-order ordinary differential equation

$$\frac{d^2x}{dt^2} + 16x = 0.$$

- (a) Determine the natural frequency,  $\omega_n$ , of the system.
- (b) Determine the damping ratio,  $\zeta$ , of the system.
- (c) Classify the system as *undamped*, *underdamped*, *critically damped* or *overdamped*.