

MATH 3331 HOMEWORK

PROFESSOR WAGNER

- (1) The motion of a spring-mass system is modeled by the equation:

$$x''(t) + \mu x'(t) + 25x(t) = 0.$$

Find all positive values of μ for which this system is

- (a) underdamped
 - (b) critically damped
 - (c) overdamped
 - (d) What is the general solution for the critically damped case?
- (2) Find a particular solution:
- (a) $y'' + 5y' + 4y = 3e^{2t} + 5e^{4t}$
 - (b) $y'' + 9y = t^2$
 - (c) $y'' + 4y = \tan(2t)$