

Due: 18 November

1. Marion & Thornton 3-22.
2. (a) Consider an oscillator driven with a linearly increasing force. Find a particular solution for  $t > 0$  to

$$\ddot{x} + 2\beta\dot{x} + \omega_0^2x = \frac{F_0t}{m}$$

by guessing a solution of the form  $x_p(t) = At + B$  and solving for  $A$  and  $B$ .

- (b) What is the general solution for an underdamped oscillator with  $\beta = \omega_0/3$  and initial conditions  $x(0) = 0$  and  $v(0) = v_0$ .
  - (c) Plot the general solution, taking reasonable values for the unknown parameters.
3. (a) Marion & Thornton 3-32.  
(b) Describe how you would find the particular solution once you knew the first few Fourier coefficients.
  4. Marion & Thornton 3-34. (The output of a full-wave rectifier is  $|\sin(\omega t)|$ .)
  5. Solve Marion & Thornton 3-9 from assignment #9 again, but this time use the Green function method. It will be much simpler and faster.
  6. Make the corrections listed under "Errata" on the Web page to your copy of Marion & Thornton, and find another error not listed.