

## Problem 20

Consider the initial value problem

$$y'' + 0.1y' + y = f(t), \quad y(0) = 0, \quad y'(0) = 0,$$

where  $f(t)$  is the same as in Problem 19.

- (a) Plot the graph of the solution. Use a large enough value of  $n$  and a long enough  $t$ -interval so that the transient part of the solution has become negligible and the steady state is clearly shown.
- (b) Estimate the amplitude and frequency of the steady state part of the solution.
- (c) Compare the results of part (b) with those from Section 3.8 for a sinusoidally forced oscillator.