Problem 22

Consider the initial value problem

\[ y'' + 0.1y' + y = g(t), \quad y(0) = 0, \quad y'(0) = 0, \]

where \( g(t) \) is the same as in Problem 21.

(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 Problem 20 and from Section 3.8 for a sinusoidally forced oscillator.