

Problem 18

Problems 17 through 22 deal with the effect of a sequence of impulses on an undamped oscillator. Suppose that

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

For each of the following choices for $f(t)$:

- (a) Try to predict the nature of the solution without solving the problem.
- (b) Test your prediction by finding the solution and drawing its graph.
- (c) Determine what happens after the sequence of impulses ends.

$$f(t) = \sum_{k=1}^{20} (-1)^{k+1} \delta(t - k\pi)$$