

Problem 25

In each of Problems 23 through 25:

- (a) Solve the given Volterra integral equation by using the Laplace transform.
- (b) Convert the integral equation into an initial value problem, as in Problem 22(b).
- (c) Solve the initial value problem in part (b), and verify that the solution is the same as the one in part (a).

$$\phi(t) + 2 \int_0^t \cos(t - \xi)\phi(\xi) d\xi = e^{-t}$$