

## Problem 15

In each of Problems 13 through 20, verify that the given functions  $y_1$  and  $y_2$  satisfy the corresponding homogeneous equation; then find a particular solution of the given nonhomogeneous equation. In Problems 19 and 20,  $g$  is an arbitrary continuous function.

$$ty'' - (1+t)y' + y = t^2e^{2t}, \quad t > 0; \quad y_1(t) = 1+t, \quad y_2(t) = e^t$$