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.

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