

## Problem 18

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.

$$x^2 y'' + xy' + (x^2 - 0.25)y = 3x^{3/2} \sin x, \quad x > 0; \quad y_1(x) = x^{-1/2} \sin x, \quad y_2(x) = x^{-1/2} \cos x$$