Problem 2

In each of Problems 1 through 14:

(a) Seek power series solutions of the given differential equation about the given point \( x_0 \); find the recurrence relation.

(b) Find the first four terms in each of two solutions \( y_1 \) and \( y_2 \) (unless the series terminates sooner).

(c) By evaluating the Wronskian \( W(y_1, y_2)(x_0) \), show that \( y_1 \) and \( y_2 \) form a fundamental set of solutions.

(d) If possible, find the general term in each solution.

\[
y'' - xy' - y = 0, \quad x_0 = 0
\]