

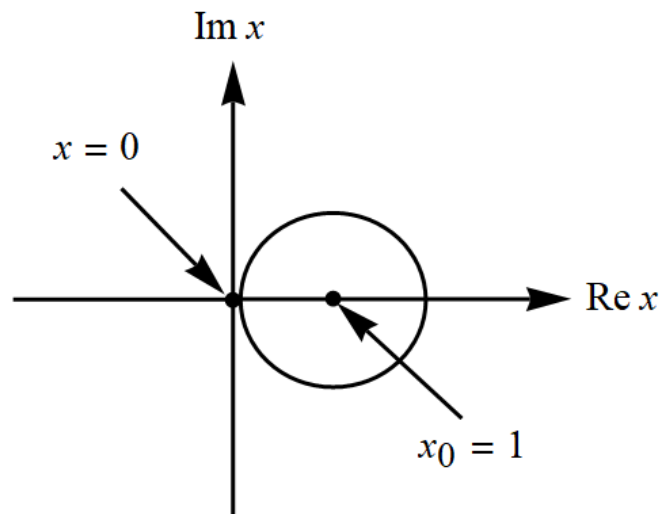
Problem 8

In each of Problems 5 through 8, determine a lower bound for the radius of convergence of series solutions about each given point x_0 for the given differential equation.

$$xy'' + y = 0; \quad x_0 = 1$$

Solution

The coefficient of y'' is x . Its zero is located at $x = 0$. Plot it in the complex plane and expand a circle centered at x_0 as much as possible until it intersects $x = 0$.



If $x_0 = 1$, the lower bound for the radius of convergence is 1.