

## 17.4 Series Solutions, page 1176

Many differential equations can not be solved explicitly in terms of finite combinations of simple familiar functions. In these cases, we use the method of power series to look for a solution of the form

$$y = f(x) = \sum_{n=0}^{\infty} c_n x^n = c_0 + c_1 x + c_2 x^2 + c_3 x^3 + \cdots + c_n x^n + \cdots .$$

**Example 1** (page 1176). Use power series to solve the equation  $y'' + y = 0$ .

**Solution.**

**Example 2** (page 1178). Solve  $y'' - 2xy' + y = 0$ .

**Solution.**