MAT 239 (Differential Equations), Prof. Swift
Worksheet 26.5, Power Series Solutions

1. (Like WeBWorK problem 4.) The Hermite Equation, $y'' - 2xy' + \lambda y = 0$, is important in physics. Find the *exact* solution of this special case (with $\lambda = 4$) using power series techniques.

$$y'' - 2xy' + 4y = 0, \quad y(0) = 1, \; y'(0) = 0$$

2. (Like problem 6.) Find the constants in the series solution $y = c_0 + c_1 x + c_2 x^2 + c_3 x^3 + \cdots$ of

$$y' + 2xy = 3 + 4x^2, \quad y(0) = 1.$$

$c_0 = $ _____ $c_1 = $ _____ $c_2 = $ _____ $c_3 = $ _____