

## Homework Assignment for Week 05

1. Section 9.8: Problems 9, 13, 28, 29, 31, 32, 33, 34(a), 35, 43.
2. (s9.8-extra2) Solve the differential equation

$$dy/dx = 1 + y^2, \quad y(0) = 0,$$

by power series expansion. That is, assume  $y(x) = a_0 + a_1x + a_2x^2 + \cdots$ , then compare the coefficients on both sides to solve for  $a_0, a_1, \cdots$ , successively. The differential equation can also be integrated directly. Verify your answer by comparing the first 2 nonzero coefficients of the Taylor series expansion of the exact solution.

3. Chap 9: Problems 27, 28, 29, 30, 32, 37, 47(a), 49-54(important), 71, 72.
4. Section 10.4: Problems 9, 13, 17, 23, 28, 29.
5. Section 10.6: Problems 15, 17, 31, 35.