Math 220 – Section 3.7 Solutions

5. Using the 2nd and 4th order Runge Kutta methods to estimate the solution of the IVP

$$y' = x + 1 - y, \quad y(0) = 1$$

at $x = 1$ using $h = 0.25$, we get:

$$\text{second order}: \ y(1) \approx 1.372529$$
$$\text{fourth order}: \ y(1) \approx 1.367894$$
$$\text{actual solution}: \ y(1) = 1.367879$$

7. Using the 4th order Runge Kutta subroutine with $h = 0.25$ to approximate the solution to the IVP

$$y' = 2y - 6, \quad y(0) = 1$$

at $x = 1$ using $h = 0.25$, we get:

$$y(1) \approx -11.767941$$

The actual solution is $y(1) = -11.778112$.