Figure 1: Red indicates the analytical answer and blue curve indicates the numerical answers
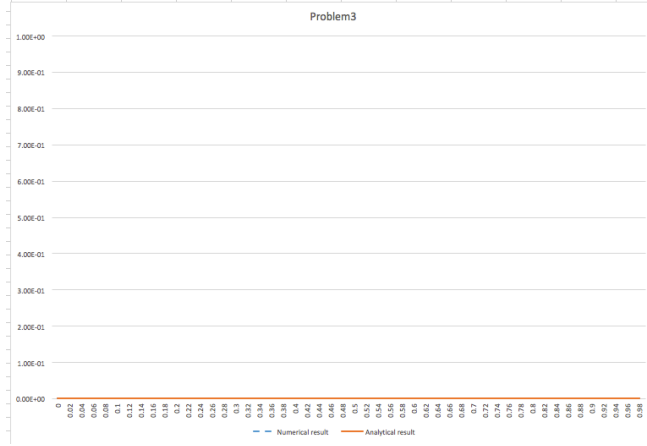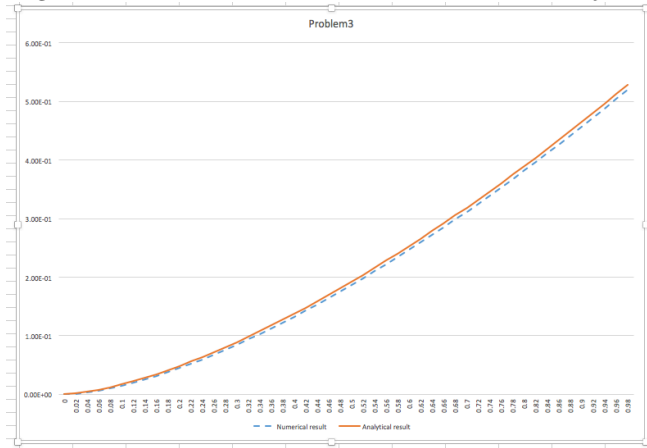
Figure 2: Problem 3 when the initial condition is $y = 0$

Figure 3: Problem 3 when the initial condition is $y = 1.0 \times 10^{-6}$