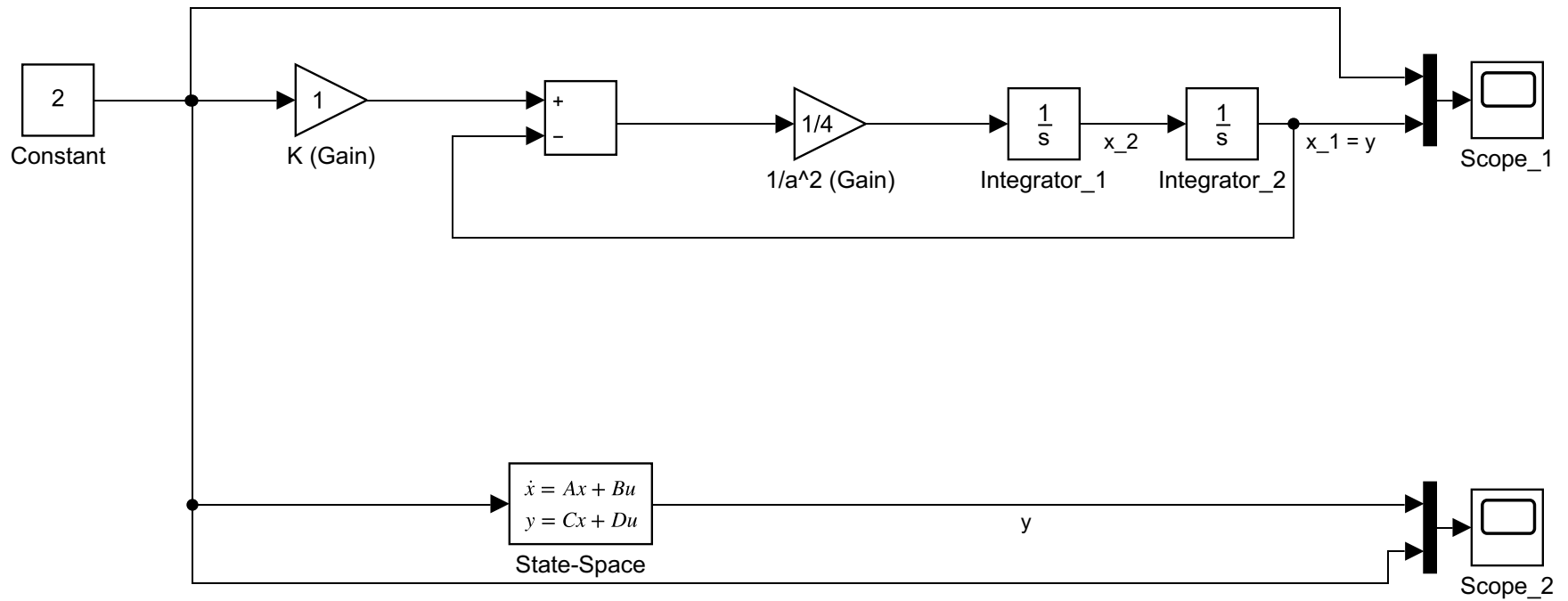
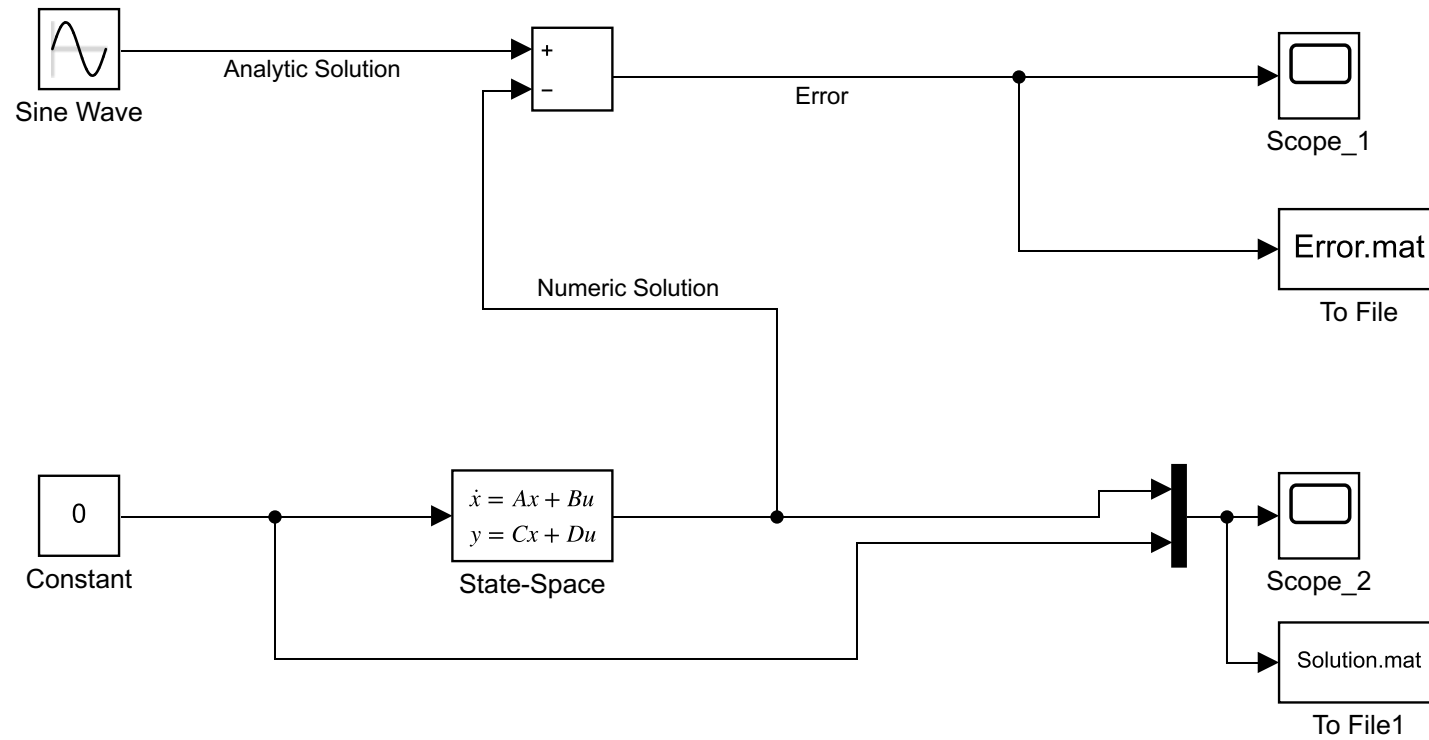


Problem 3.3 b)

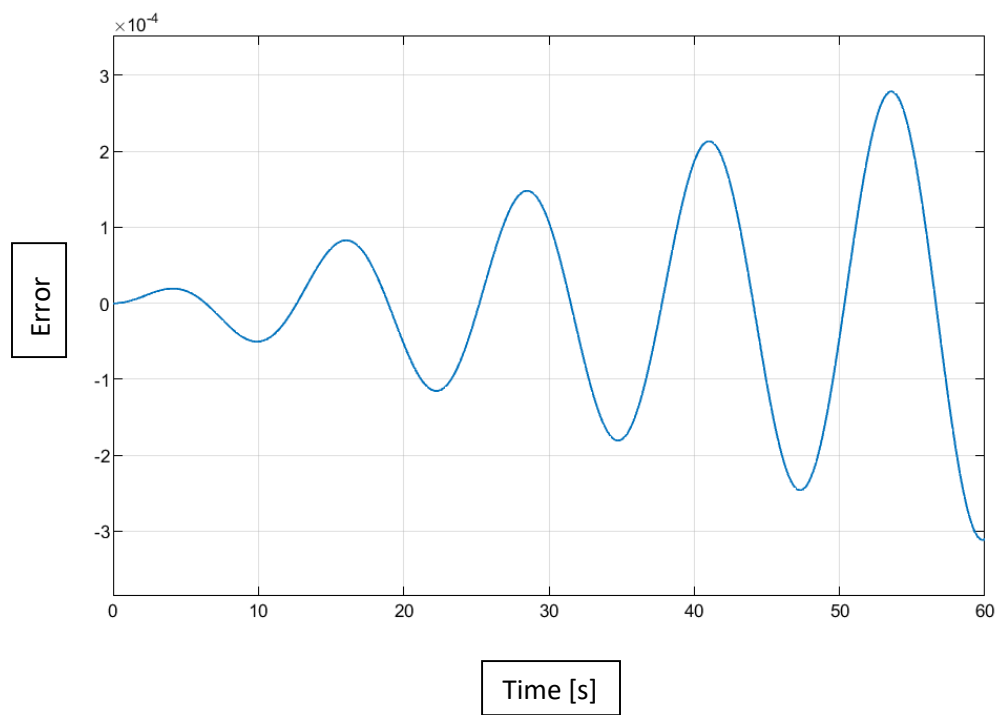


Problem 3.3 c)

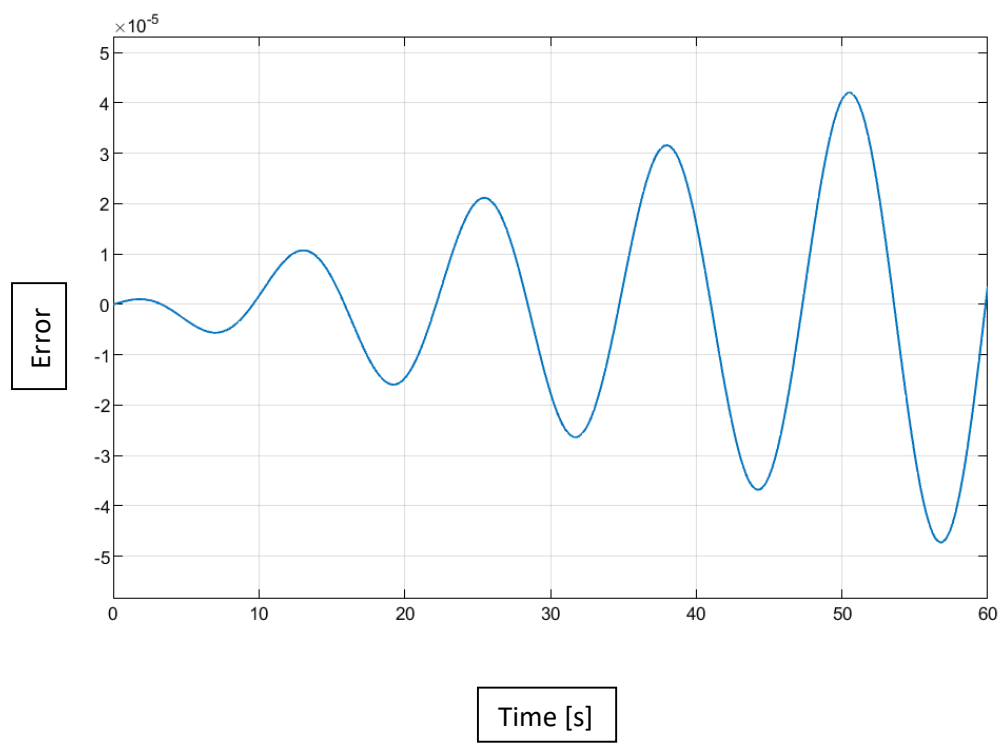


Problem 3.3 d)

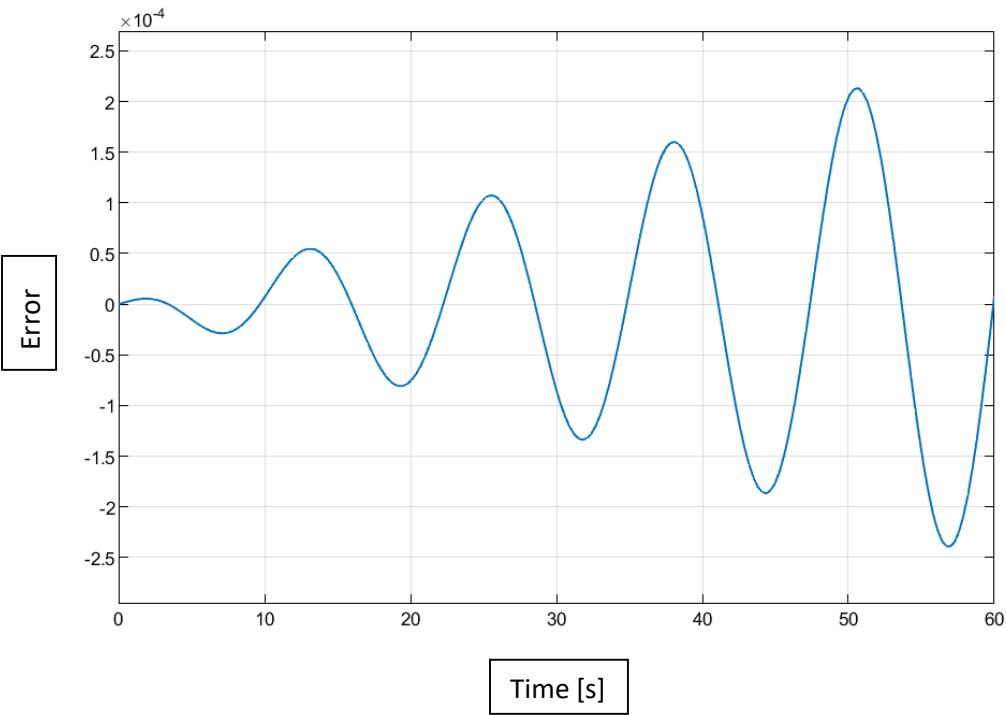
Graph: Ode4, $h = 0.1$



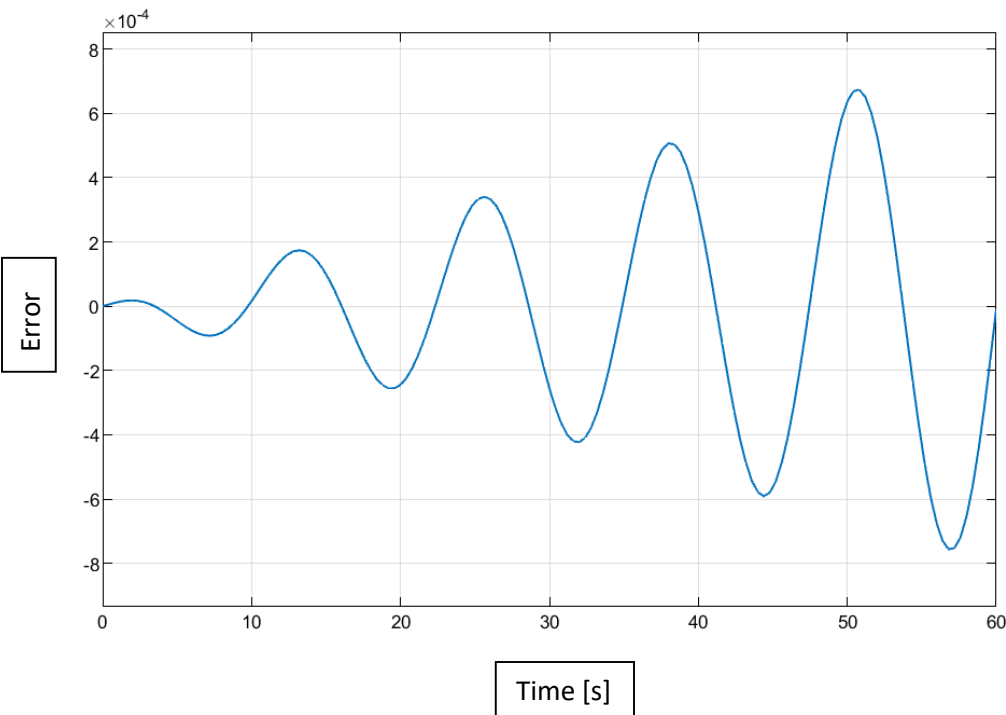
Graph: Ode4, $h = 0.2$



Graph: Ode4, h = 0.3



Graph: Ode4, h = 0.4

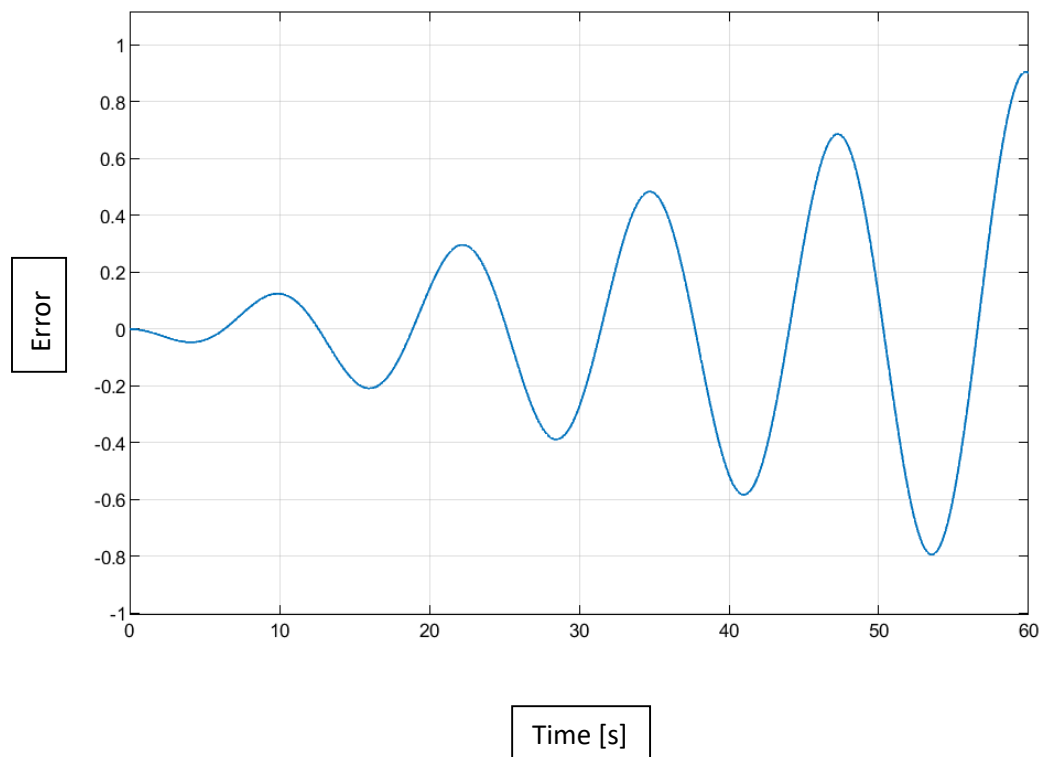


Observations:

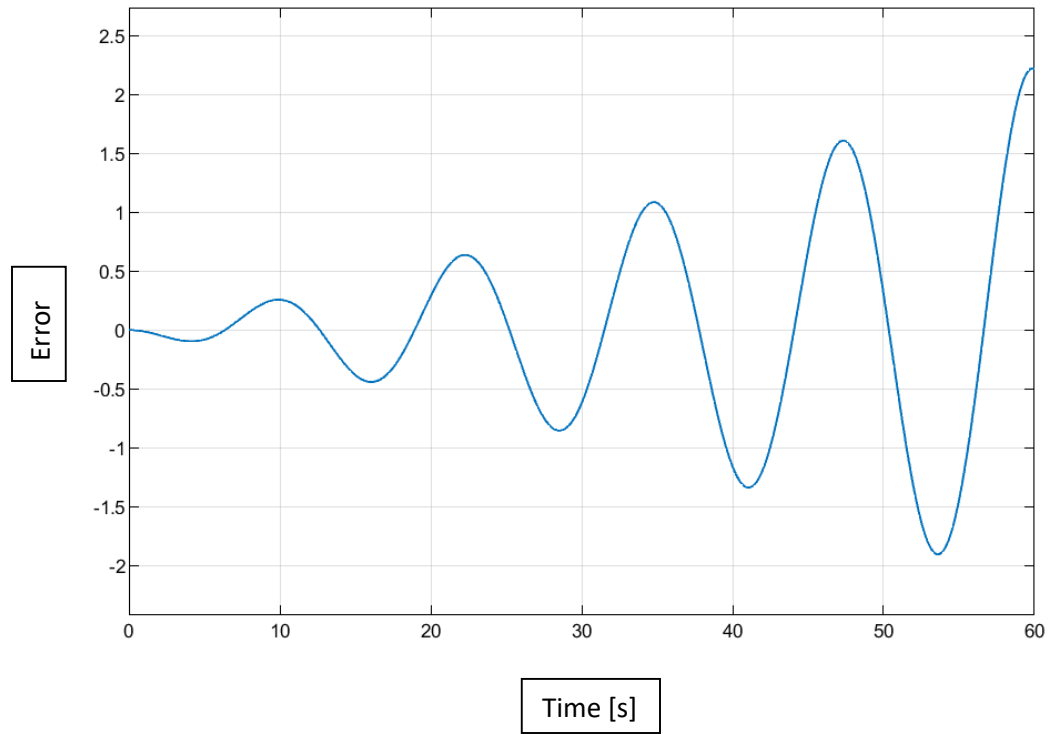
- ➔ The error increases as h increases
- ➔ Even though the error is insignificantly small, it does grow overtime regardless of the size of h
- ➔ Since the error is insignificantly small for all the signals, they are all acceptable

Problem 3.3 e)

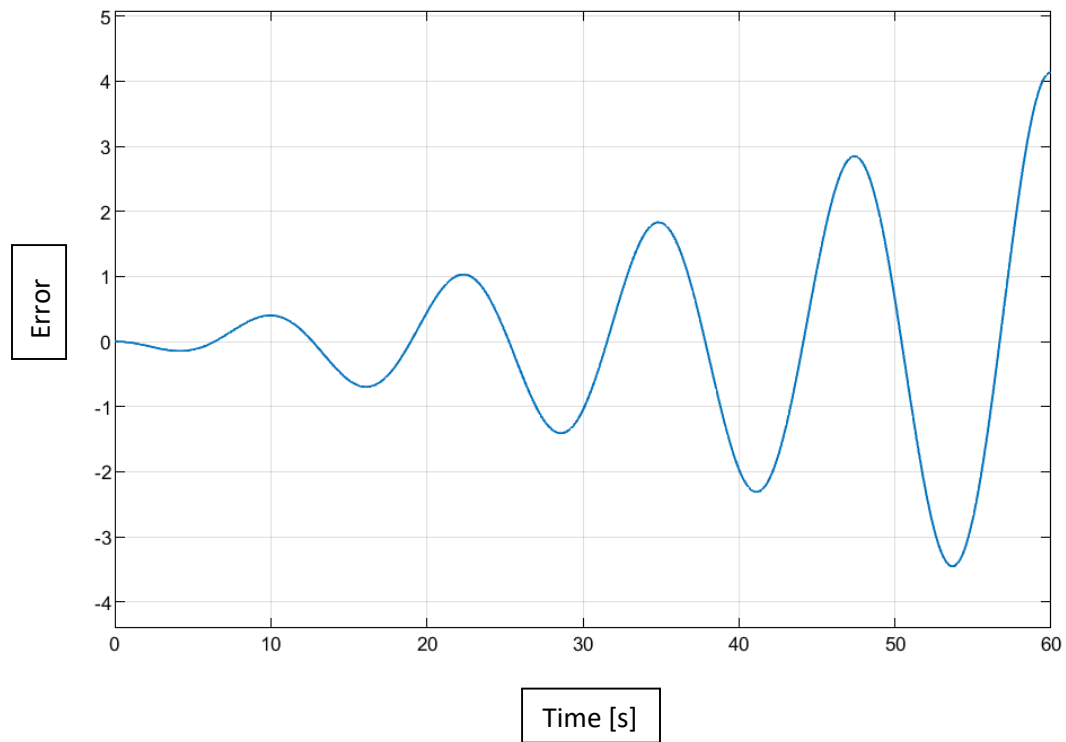
Graph: Ode1, $h = 0.05$



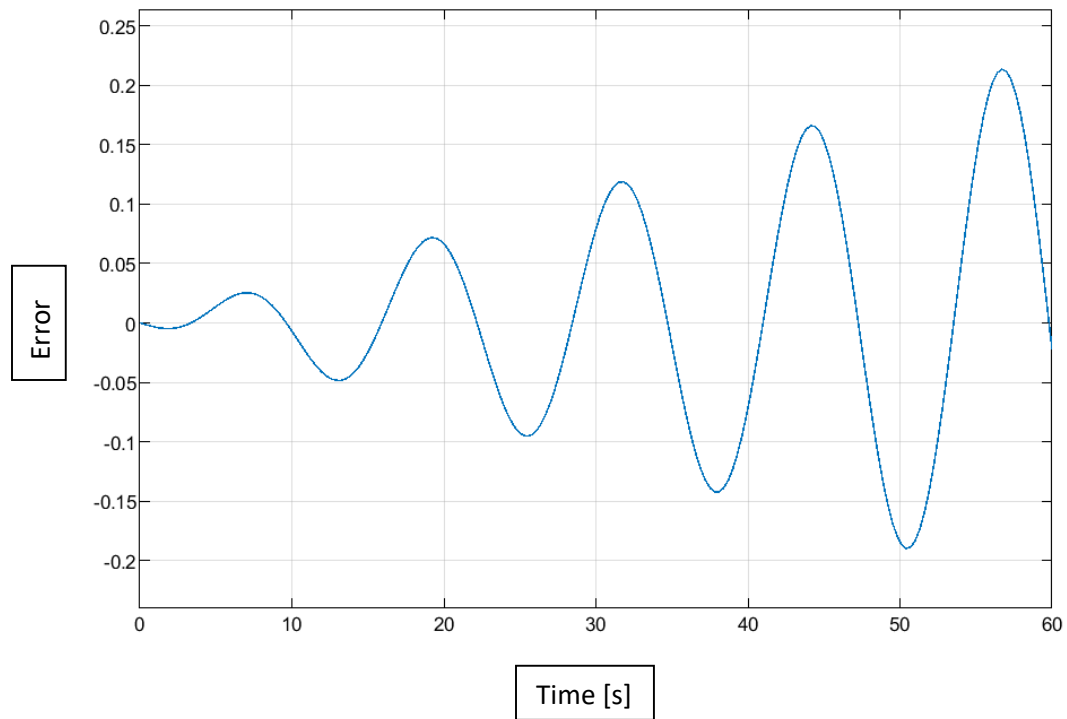
Graph: Ode1, $h = 0.1$



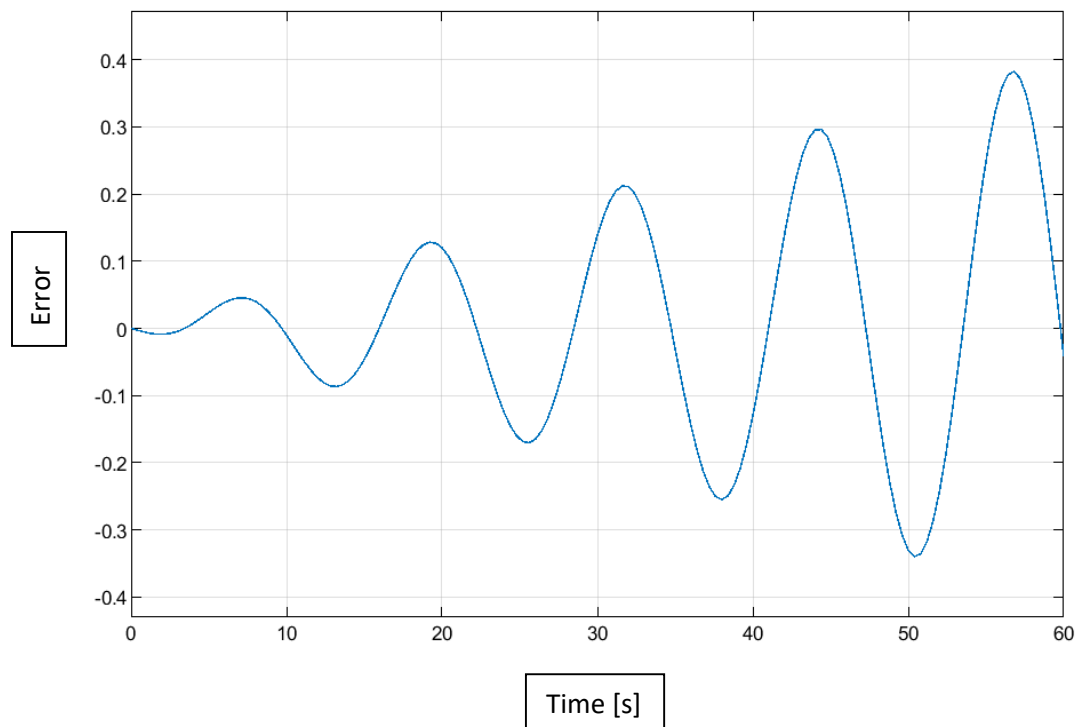
Graph: Ode1, $h = 0.15$



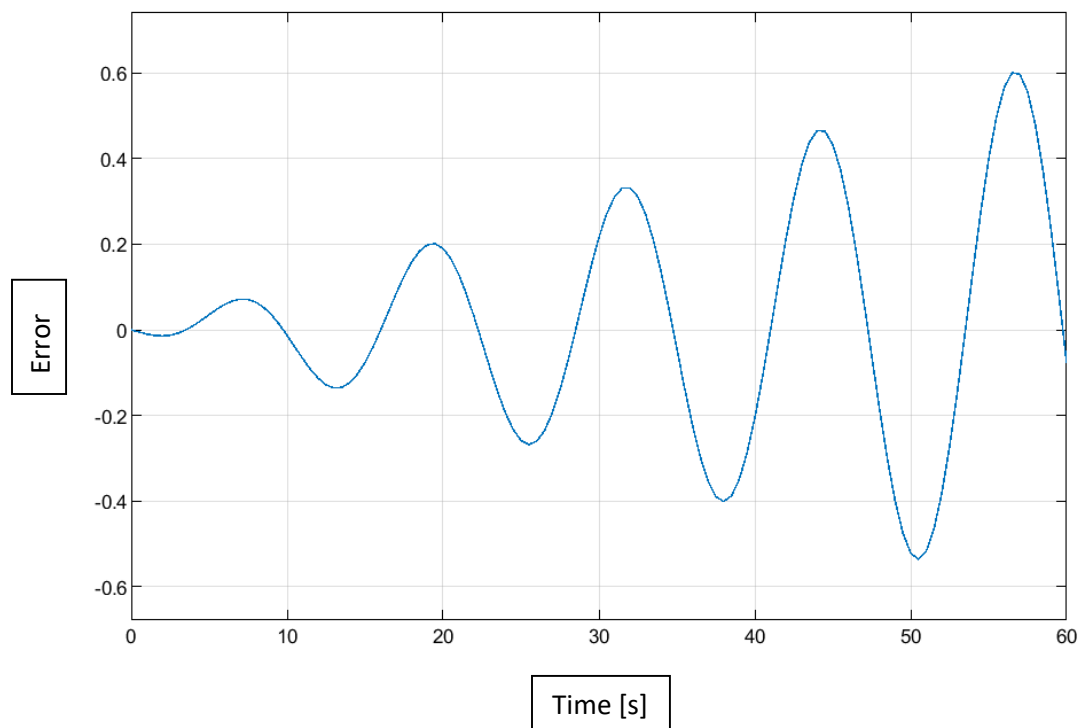
Graph: Ode2, $h = 0.3$



Graph: Ode2, $h = 0.4$



Graph: Ode2, $h = 0.5$



Observations:

- ➔ Comparing to part d, the errors are fairly large, and would have an effect on the actual signal
- ➔ For Euler (ode1), the error grows rapidly even if one only increases the h by a small number
- ➔ For Heun (ode2), the error does not grow as rapidly, even though we change the h by a larger number than for Euler