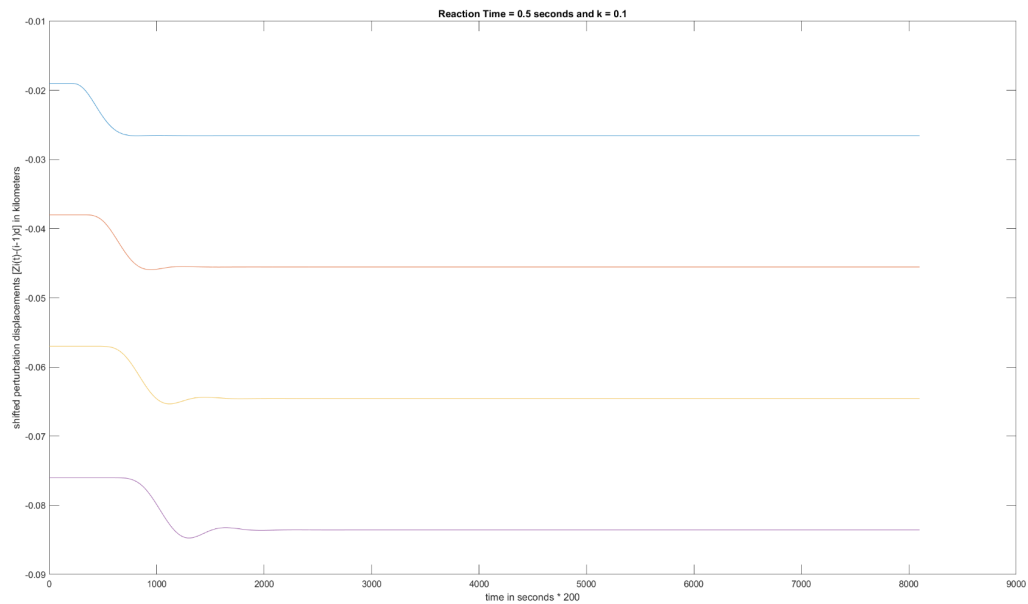# MA5710 Assignment-1 Question 2
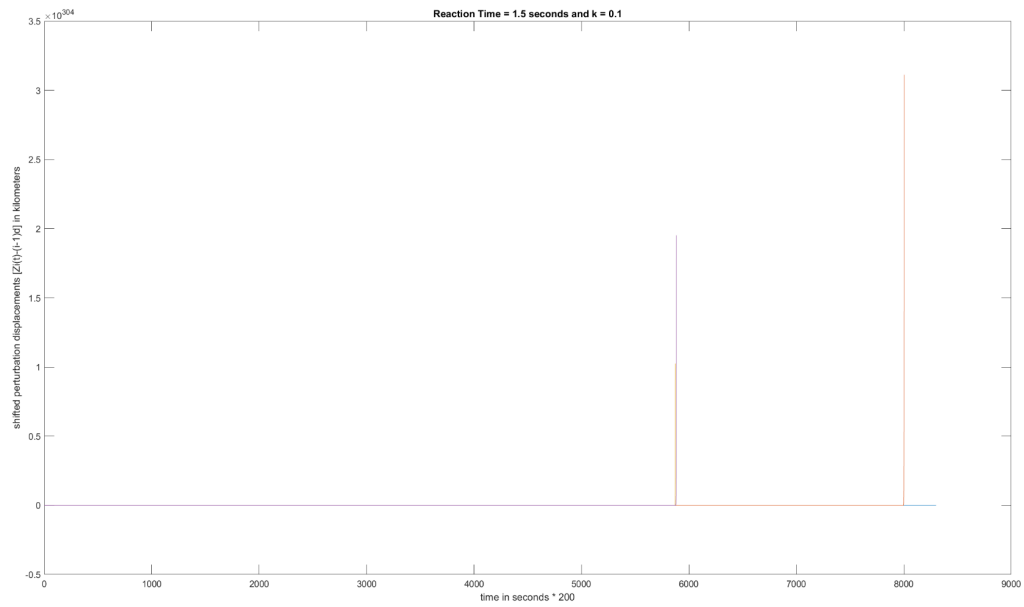
Name- Siddharth Betala
Roll Number - BE19B032

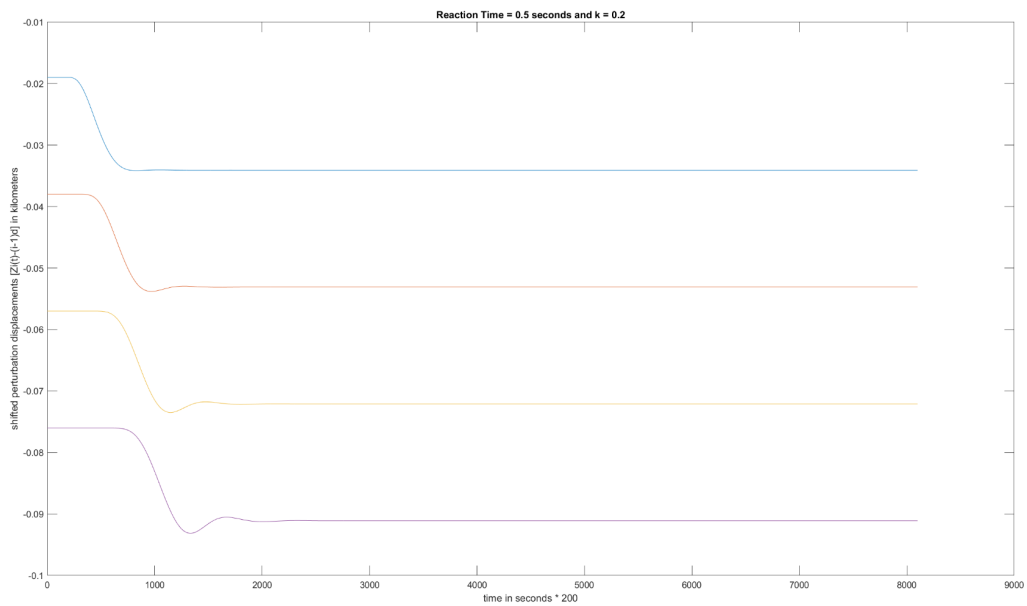For the given data, the plots found using Euler's method are given as:

1) k = 0.1

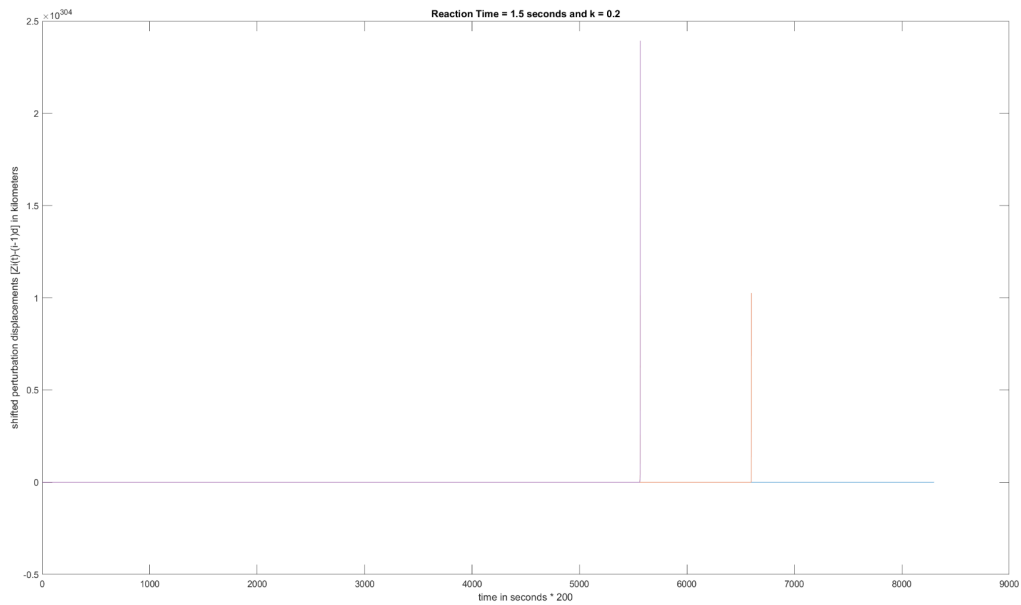
Plot for k = 0.1 and driver's reaction time = 0.5 seconds

Plot for k = 0.1 and driver's reaction time = 1.5 seconds

2) k = 0.2

Plot for k = 0.2 and driver's reaction time = 0.5 seconds

Reaction Time = 1.5 seconds and k = 0.2

(y-axis) shifted perturbation displacements [Zi(t)-(i-1)d] in kilometers

(x-axis) time in seconds * 200

Plot for k = 0.2 and driver's reaction time = 1.5 seconds

Differences between this model and the one discussed in class:

1) For the model discussed in class, the dependence of $z'_i(t+T)$ on $(z_{i-1}(t)-z_i(t))$ is **logarithmic.**
   However for this model, the dependence of $z'_i(t+T)$ on $(z_{i-1}(t)-z_i(t))$ is **quadratic.**
   Here T represents the reaction time.

2) The shifted perturbed displacements $z_i(t)$ - $(i-1)d$ **shoot up to massive values** for the current model for higher reaction times as evident from the plot.
   However, in the model discussed in class, these values keep decreasing with time.