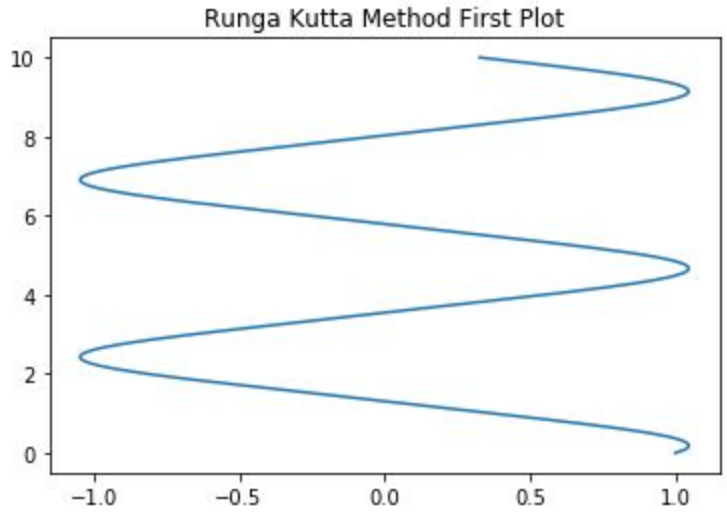
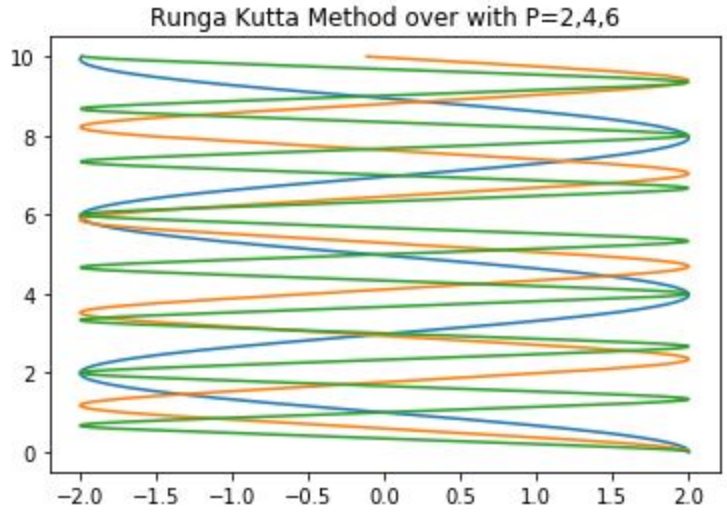
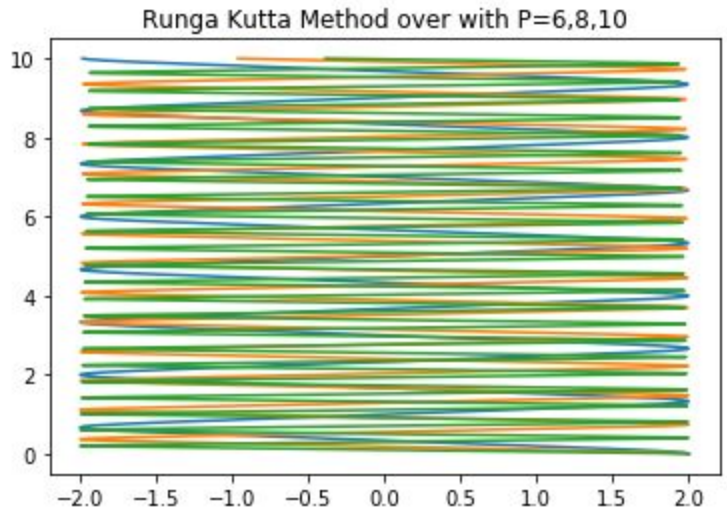
Jessica Hamilton
Computational
Exercise 20
Anharmonic Oscillator with RK method

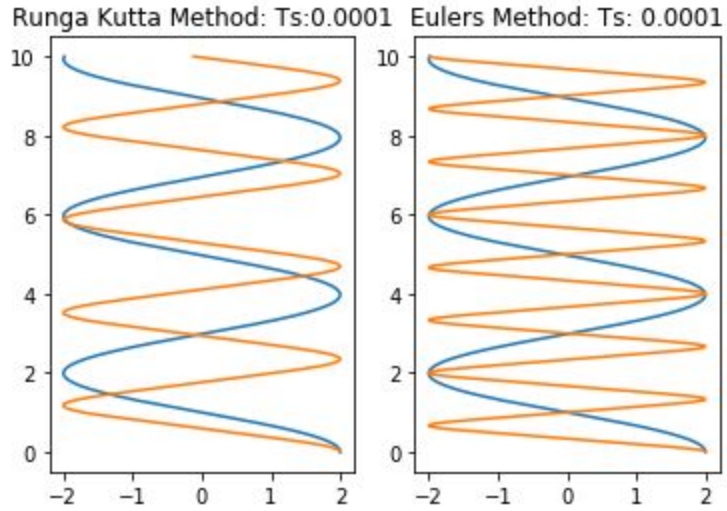


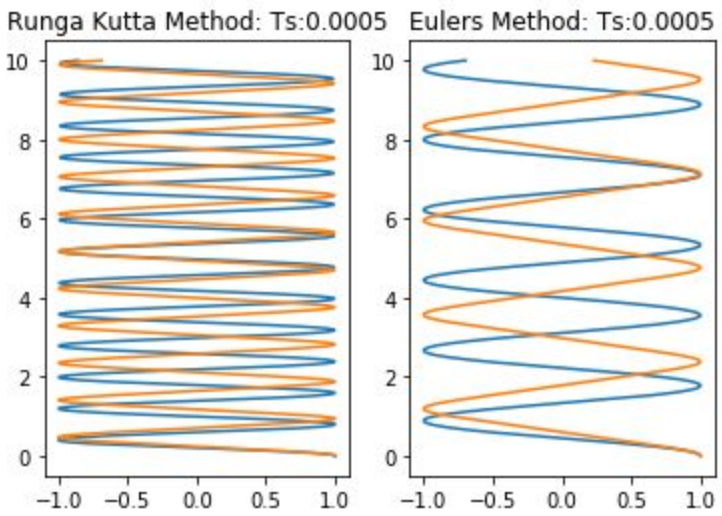
Above is the initial graph of the Runga Kutta method and below is the graphs representing the various P values with the Runga Kutta Method.





When comparing the two methods, They are quite similar, with a given amplitude, but the frequency or period is different for the two. At a small step-size, the Euler method has a higher frequency, but as the step-size grows, the Runga Kutta method increases in frequency. You can see this below.




Runga Kutta Method: Ts:0.0005
Eulers Method: Ts:0.0005
10
8
6
4
2
0
−1.0
−0.5
0.0
0.5
1.0