

數值方法 作業三

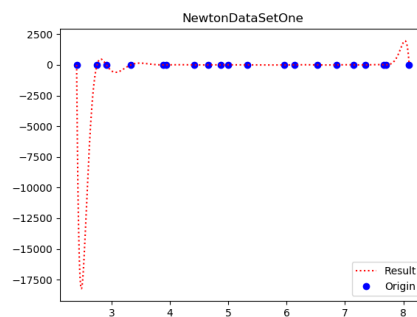
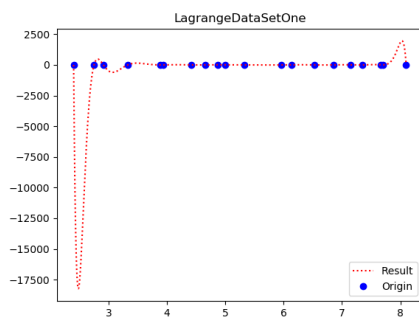
資工三乙 406262319 黃育皓

程式架構

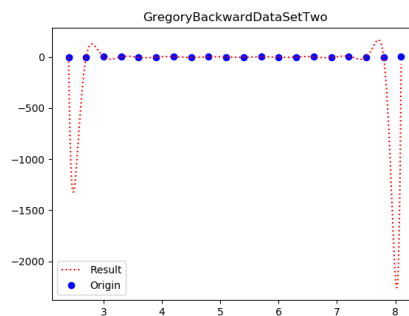
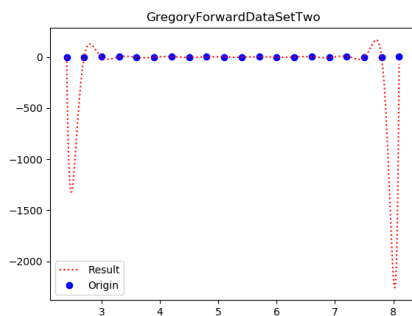
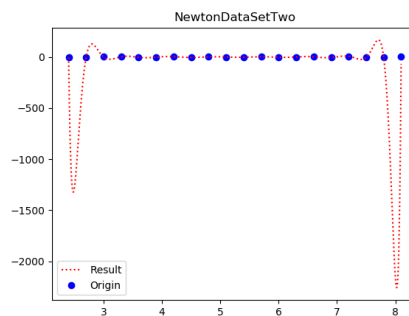
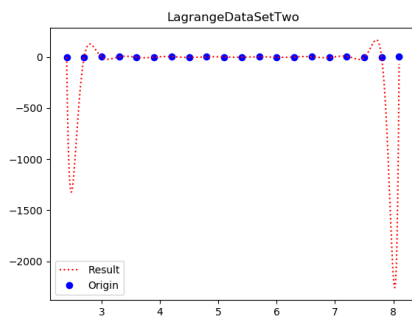
- 每個方法各自一個 py 檔
- DATA.py 中為公共測資
- main.py 中定義方程式並使用各個方法
- 各個方法的結果圖儲存在 out/<MethodName> 底下
- 將 自訂方程式中 x 為 2~8 時的結果做成圖
- 將 公共題中 x 為 2.4~8.1 時的結果做成圖
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結果圖比較

- 公共測資一

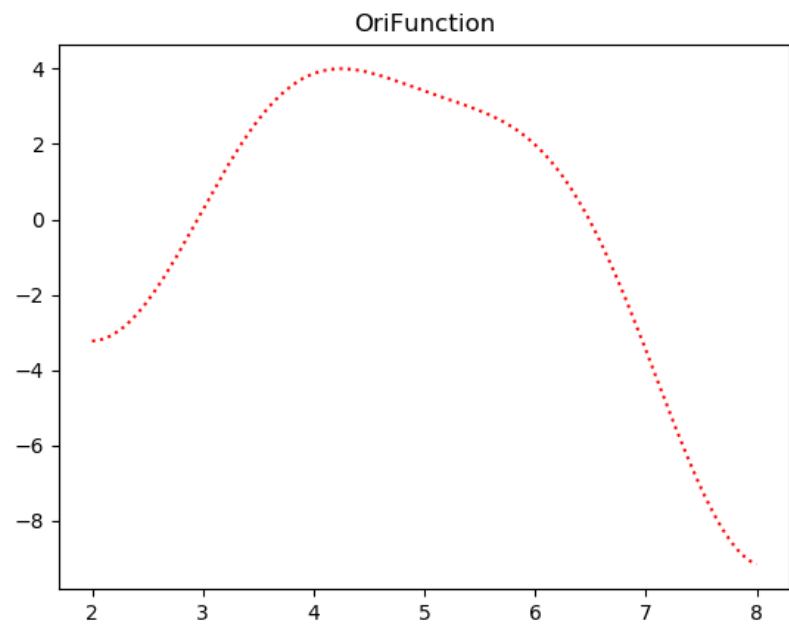


- 公共測資二

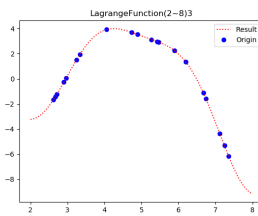
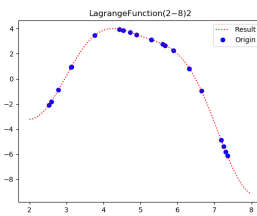
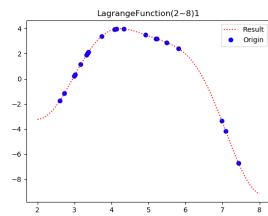


- 自定義方程式 $\sin 2x + \cos 2x - x \sin x$ (依照範圍做比較)
 - 2~8

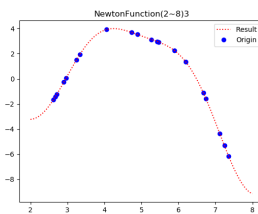
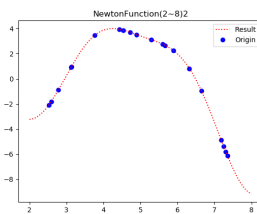
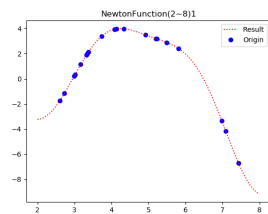
■ 原始圖



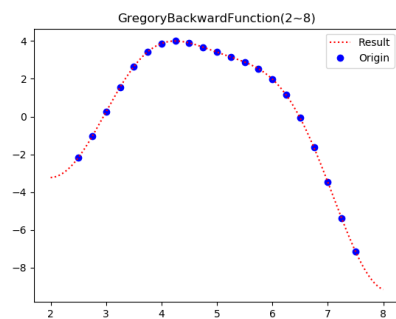
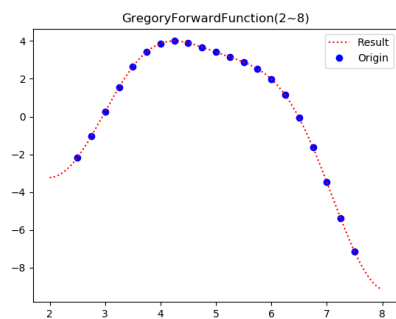
■ Lagrange(Random三組)



■ Newton(Random三組)

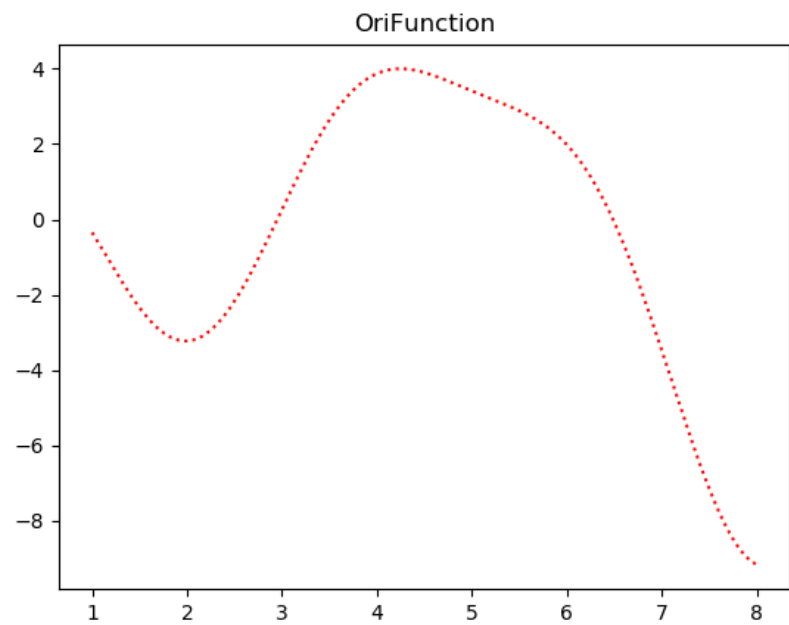


■ GregoryForward/Backward

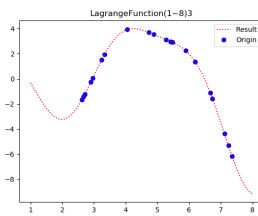
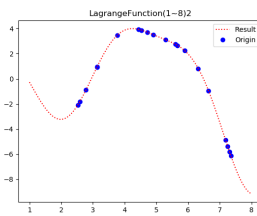
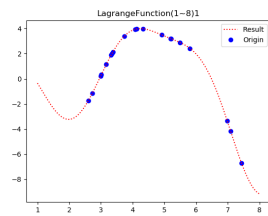


○ 1~8

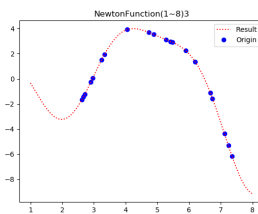
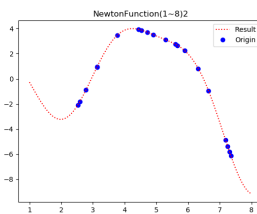
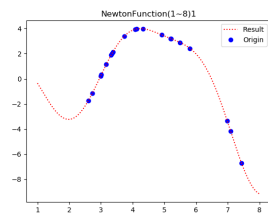
■ 原始圖



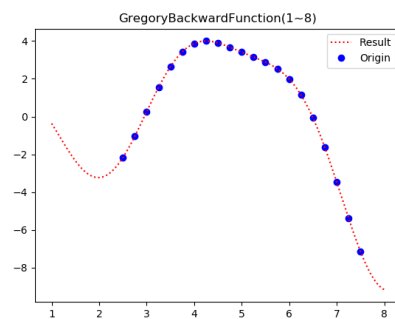
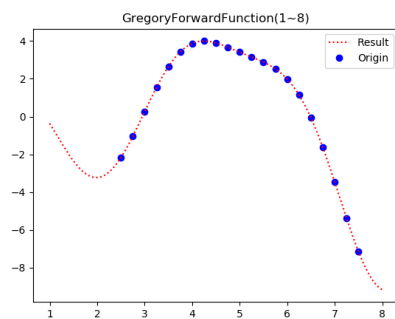
■ Lagrange(Random三組)



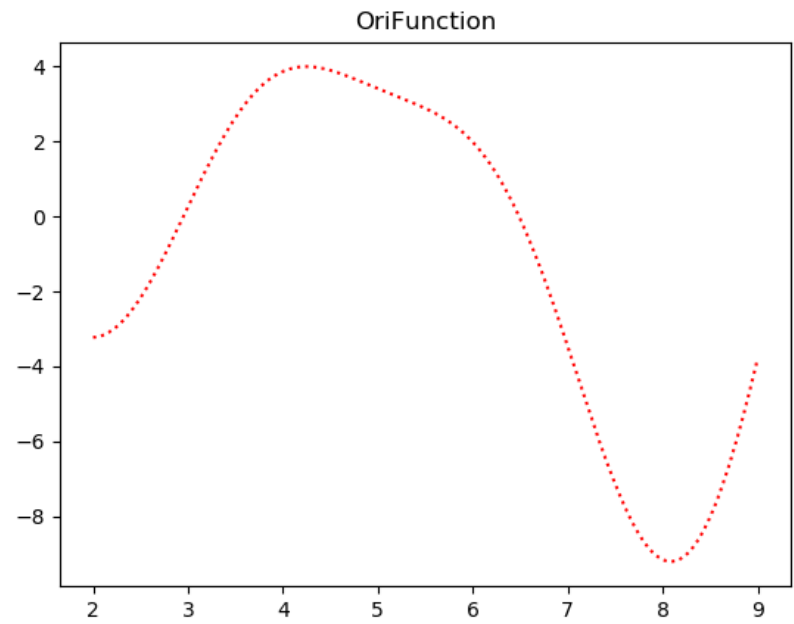
■ Newton(Random三組)



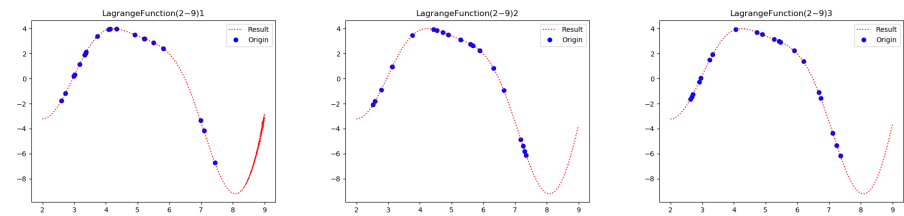
■ GregoryForward/Backward



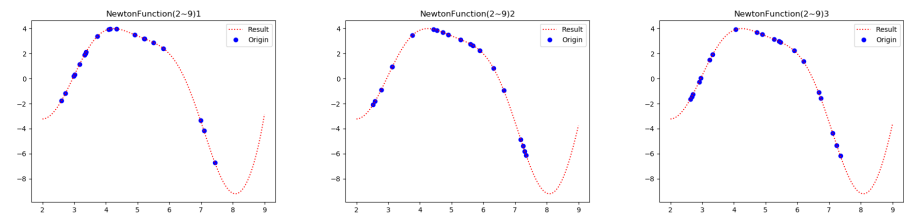
○ 2~9



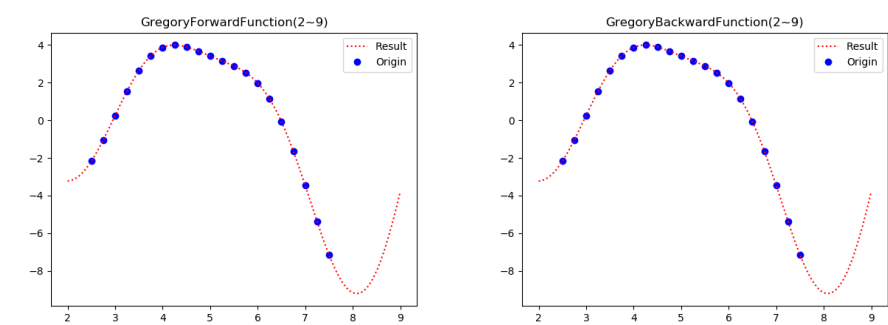
■ Lagrange(Random三組)



■ Newton(Random三組)

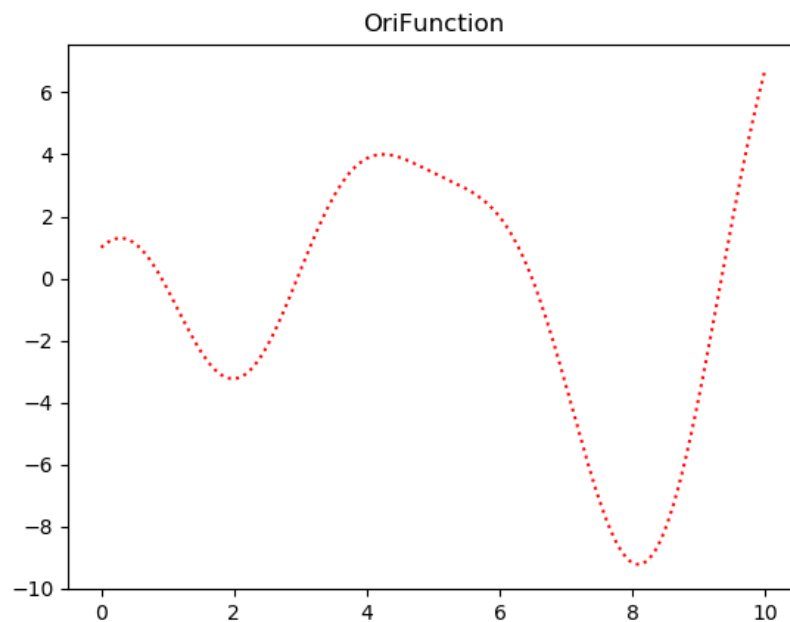


■ GregoryForward/Backward

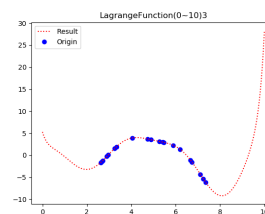
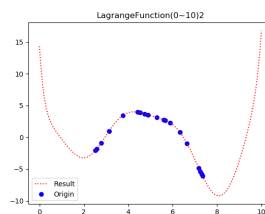
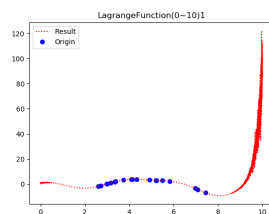


○ 0~10

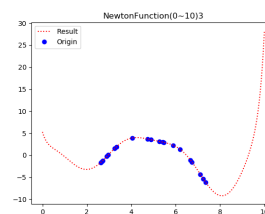
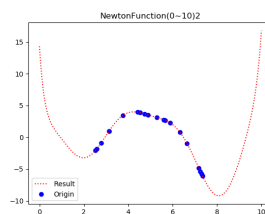
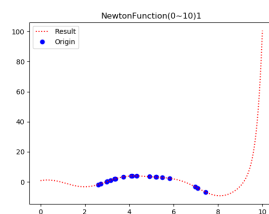
■ 原始圖



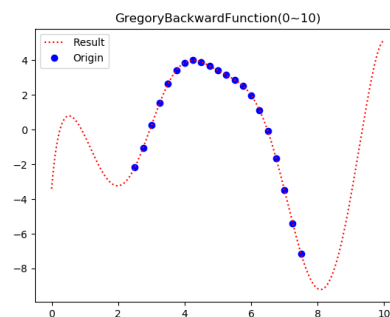
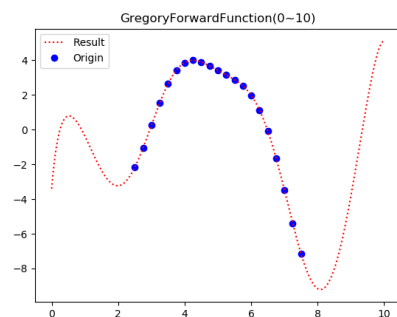
■ Lagrange(Random三組)



■ Newton(Random三組)



■ GregoryForward/Backward



結論

- 初始數值的 x 皆定義於 $[2.5, 7.5]$
- 在Lagrange與Newton中當超出這個定義域時其函數圖有很大的偏差
- 在GregoryForward/Backward法中的偏差就比較小