

數值方法 第三次作業

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在這次的實驗中，我將所有的n都設為4（除非後面有加註解）。

Case 1:

Composite trapezoidal rule: 8.75
Composite trapezoidal rule(n=20): 8.67
Composite Simpson's rule: 8.66666666667
Real value: 8.66666666666667

Case 2:

Composite trapezoidal rule: 0.501907407407
Composite trapezoidal rule(n=20): 0.446905340206
Composite Simpson's rule: 0.454703703704
Real value: 0.4444444444444444

Case 3:

Composite trapezoidal rule: 1.21819032422
Composite trapezoidal rule(n=20): 1.21892090947
Composite Simpson's rule: 1.21894515686
Real value: 1.21895141649746

Case 4:

Composite trapezoidal rule: 1.89611889794
Composite trapezoidal rule(n=20): 1.99588597271
Composite Simpson's rule: 2.00455975498
Real value: 2.000000000000000

Case 5:

Composite trapezoidal rule: 1.72722190456
Composite trapezoidal rule(n=20): 1.71863978893
Composite Simpson's rule: 1.71831884192
Real value: 1.71828182845905

Case 6:

Composite trapezoidal rule: 0.436206615655
Composite trapezoidal rule(n=20): 0.438720384735
Composite Simpson's rule: 0.438884372423
Real value: 0.438824573117476

心得：因為這次將n設為4的關係，導致在Composite trapezoidal rule的運算上有些許的不準，而Composite Simpson's rule卻很接近實際值。不過在把n加到20之後，Composite trapezoidal rule也更接近實際值了