Numerical analysis Experiment Report

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1 Introduction

The programming implementation uses Richardson extrapolation to calculate the value of $f\prime(x)$, h = 1. Function $f(x)$ respectively Pick

$$\ln x, x = 3, M = 3$$

$$\tan x, x = \arcsin 0.8, M = 4$$

$$sin\left(x^2 + \frac{1}{3}x\right), x = 0, M = 5$$

Output the corresponding triangular array

2 Method

Richardson extrapolation.

3 Results

```
>> HW5
    0.3466         0         0         0
    0.3365    0.3331         0         0
    0.3341    0.3333    0.3333         0
    0.3335    0.3333    0.3333    0.3333


   -1.3062         0         0         0         0
    6.4653    9.0558         0         0         0
    3.2091    2.1237    1.6615         0         0
    2.8730    2.7609    2.8034    2.8215         0
    2.8009    2.7769    2.7779    2.7775    2.7774


    0.1768         0         0         0         0         0
    0.3215    0.3697         0         0         0         0
    0.3323    0.3359    0.3337         0         0         0
    0.3332    0.3335    0.3333    0.3333         0         0
    0.3333    0.3333    0.3333    0.3333    0.3333         0
    0.3333    0.3333    0.3333    0.3333    0.3333    0.3333
```

4 Discussion

A Computer Code

See attached files