

# Answer For Hw5

## Problem 1 Solution

输出结果:

$$y^3/x - \sin(x)*\sin(y)$$

$$8*z - 4*\cos(x)*\sin(x) + 3*\cos(y)*\sin(y)^2$$

$$14$$

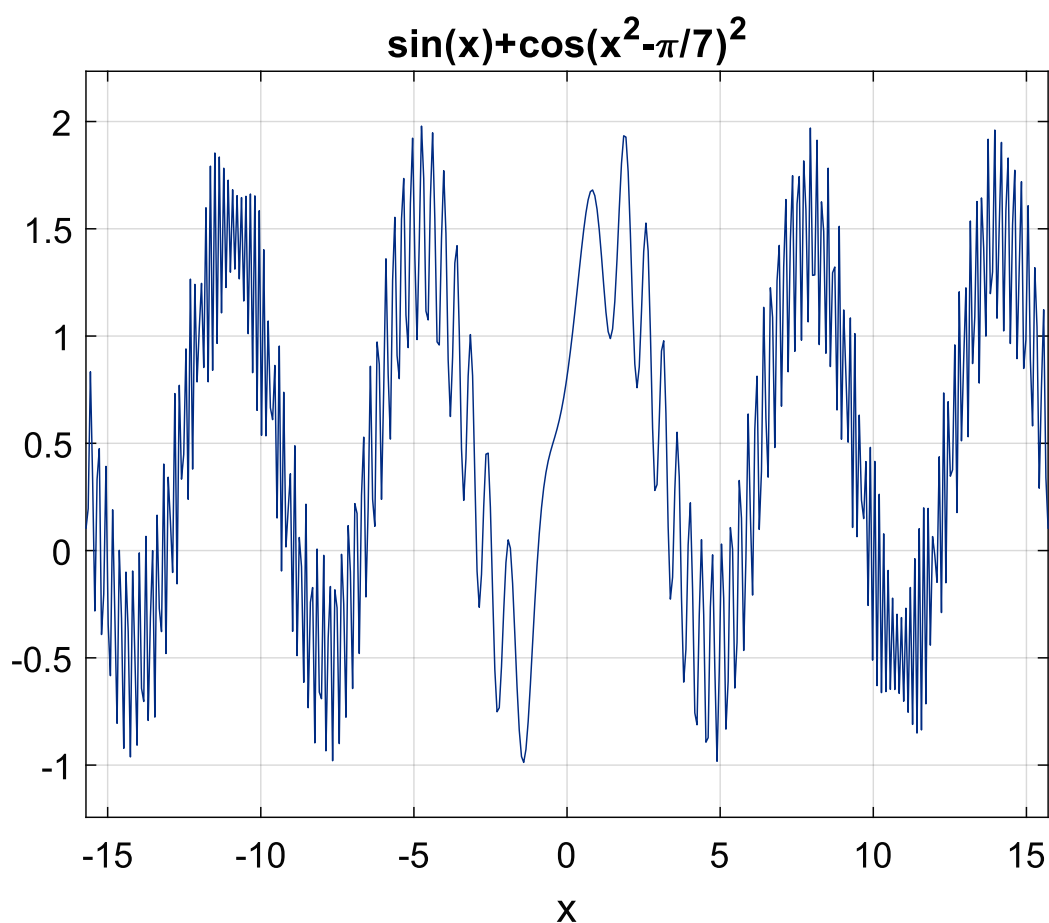
$$(x^2*(2*x + 15))/6$$

$$- (5*x^2)/2 - x^3/(x^n*(n - 3))$$

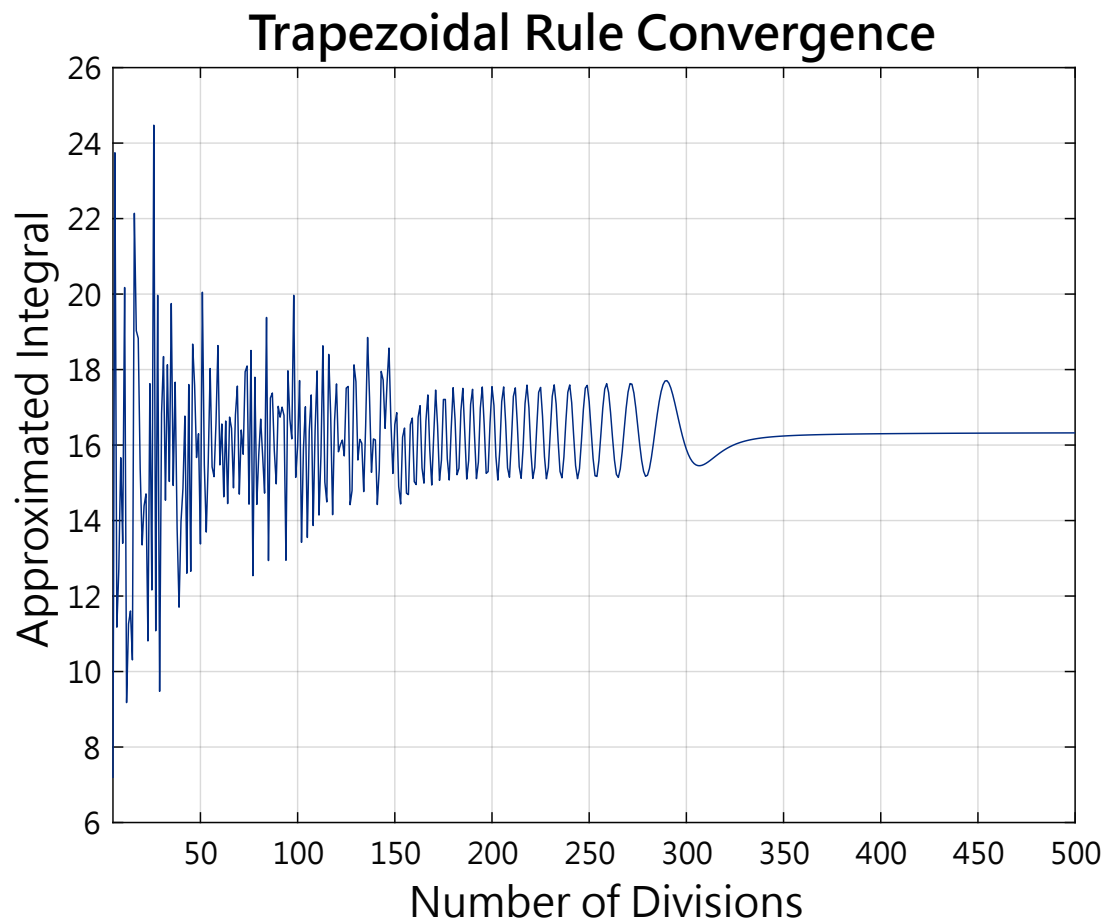
$$\log(\cos(z))*\cos(x)*\sin(y)$$

## Problem 2 Solution

- 图形图



- 积分图



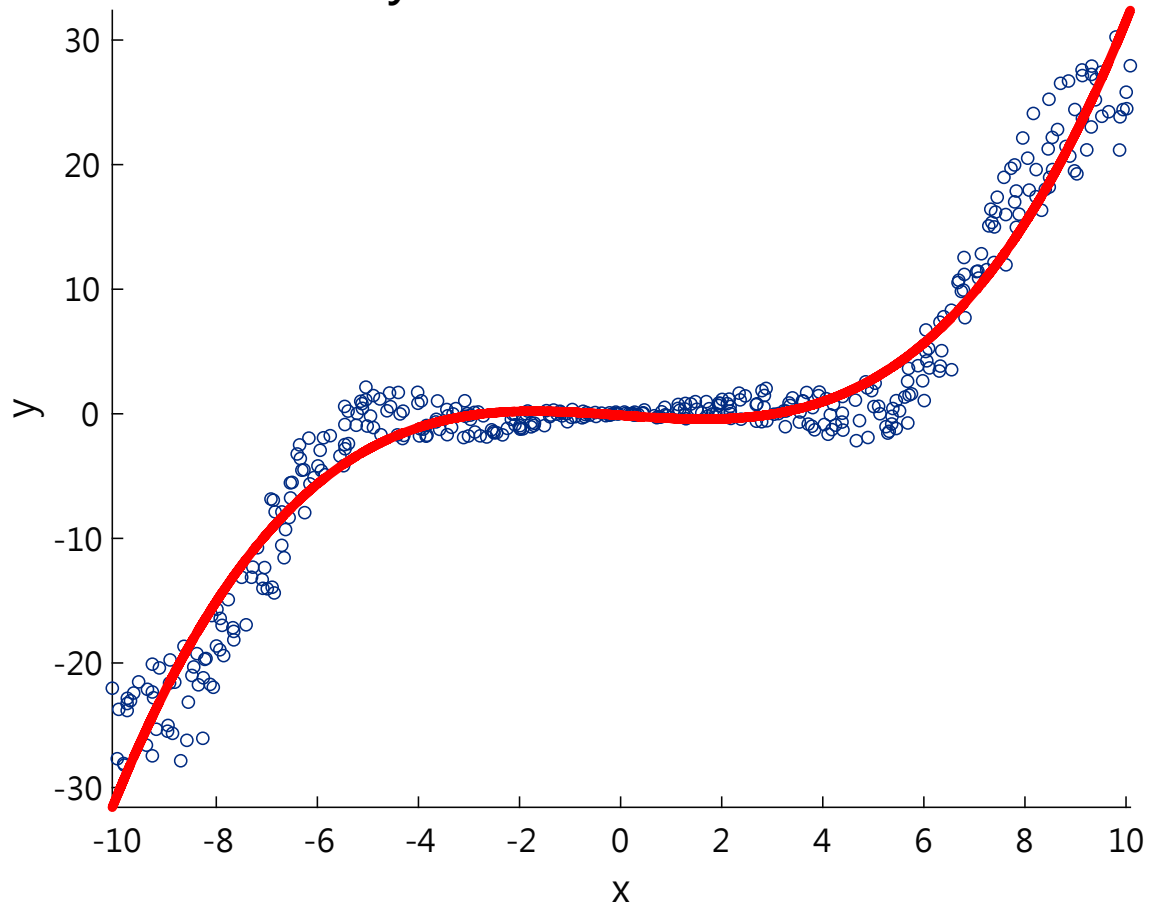
- 收敛条件判断  
每次按照 $2^n$ 次形式划分区域，取精度为 $10^{-3}$ ，对应迭代结果为

Iterations until convergence: 2048

## Problem 3 Solution

$$R = 0.85$$

## Polynomial Fit with $R^2 = 0.85$



- $R = 0.85$

polynomial degree = 3

- $R = 0.95$

polynomial degree = 4

## Problem 4 Solution

参数设定:

重力加速度: 9.81 粘滞系数: 0.2 初始点 (0, 0) 水平速度: 速度上限15 速度下限5 竖直速度: 10 时间间隔0.01, 距离20, 容差0.01

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g = 9.81;
c = 0.2;
x0 = 0;
y0 = 0;

vxa = 5;
vxb = 15;
vy = 10;

tstep = 0.01;
dis = 20;
tol = 0.01;

```

迭代结果

Optimal x velocity: 14.8456 m/s

## Problem 5 Solution

