



多项式拟合

给定自变量数据如下:

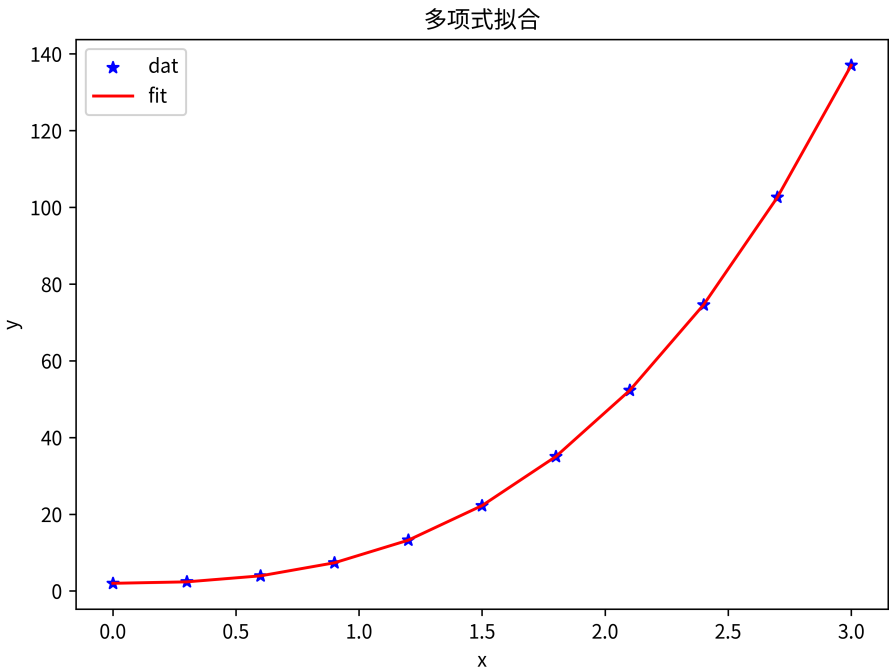
0,0.3,0.6,0.9,1.2,1.5,1.8,2.1,2.4,2.7,3

因变量数据如下 :

2,2.378,3.944,7.346,13.232,22.25,35.048,52.274,74.576,102.602,137

以及待拟合公式:

$$y = \sum_{i=1}^4 p_i x^{i-1}$$



```
local print = require('package.print'). print
local plt = require('package.plot')
local mol = libminoptlab
```

```

local xdat = mol.matrix.new({0, 0.3000 , 0.6000 , 0.9000 , 1.2000 , 1.5000 , 1.8000 , 2.1000 ,2.4000 , 2.7000 , 3.0000})
local ydat = {2.0000 , 2.3780 , 3.9440 , 7.3460 , 13.2320 , 22.2500 , 35.0480 , 52.2740 ,74.5760 , 102.6020 , 137.0000}

local model = mol.polyfitfun(4)
local p,corr,fval = mol.polyfit(xdat,ydat,model,4)

print({
    p = p,
    corr = corr,
    fval = fval
})

local fit = mol.tofit(model,p)
local fity = xdat:apply(fit)

local img1 = plt.scatter({{xdat:tovector(),ydat}},{'dat'},{{marker = '*',color='b'}})
local img2 = plt.line({{xdat:tovector(),fity}},{'fit'},{{color = 'r'}})

local fw = plt.framework(111,'多项式拟合',{'x','y'})
plt.show({{fw,{img1,img2}}})

```

其解是 $p = [2, 2.3993848369733e - 14, 3, 4]^T$ ，相关系数是1，残差平方和是 $1.1945819295375e - 27$ 。

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