Project6

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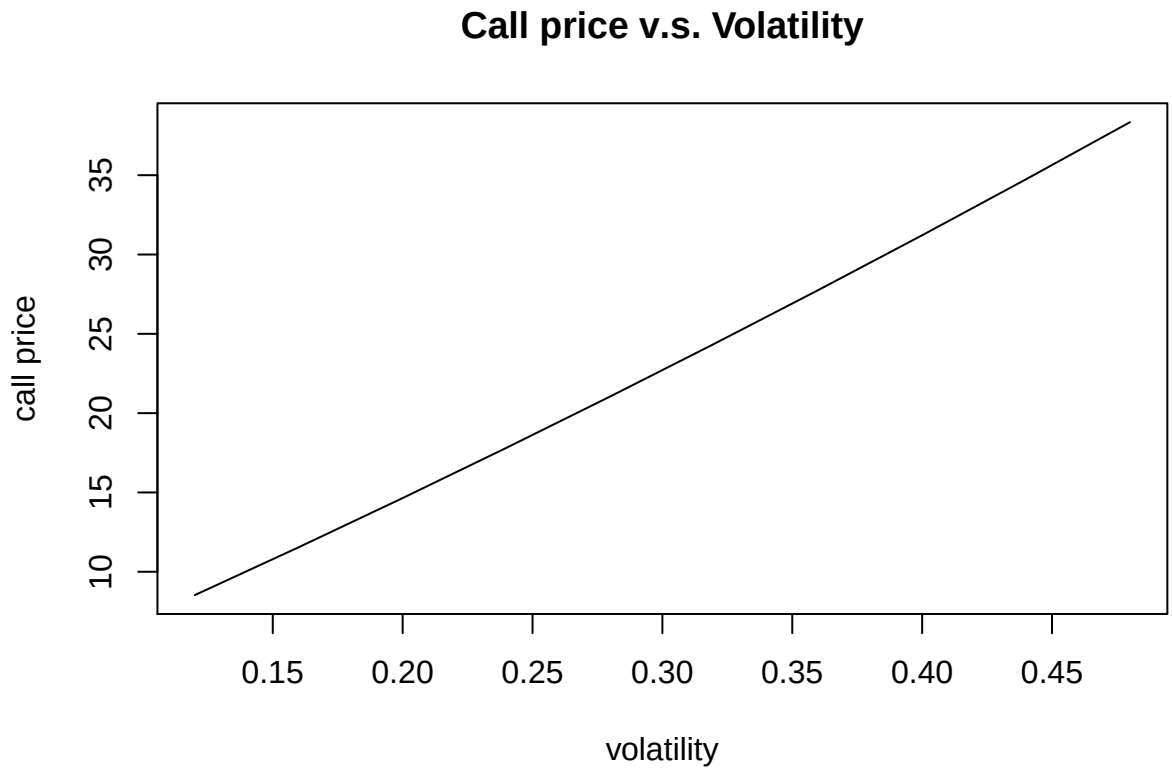
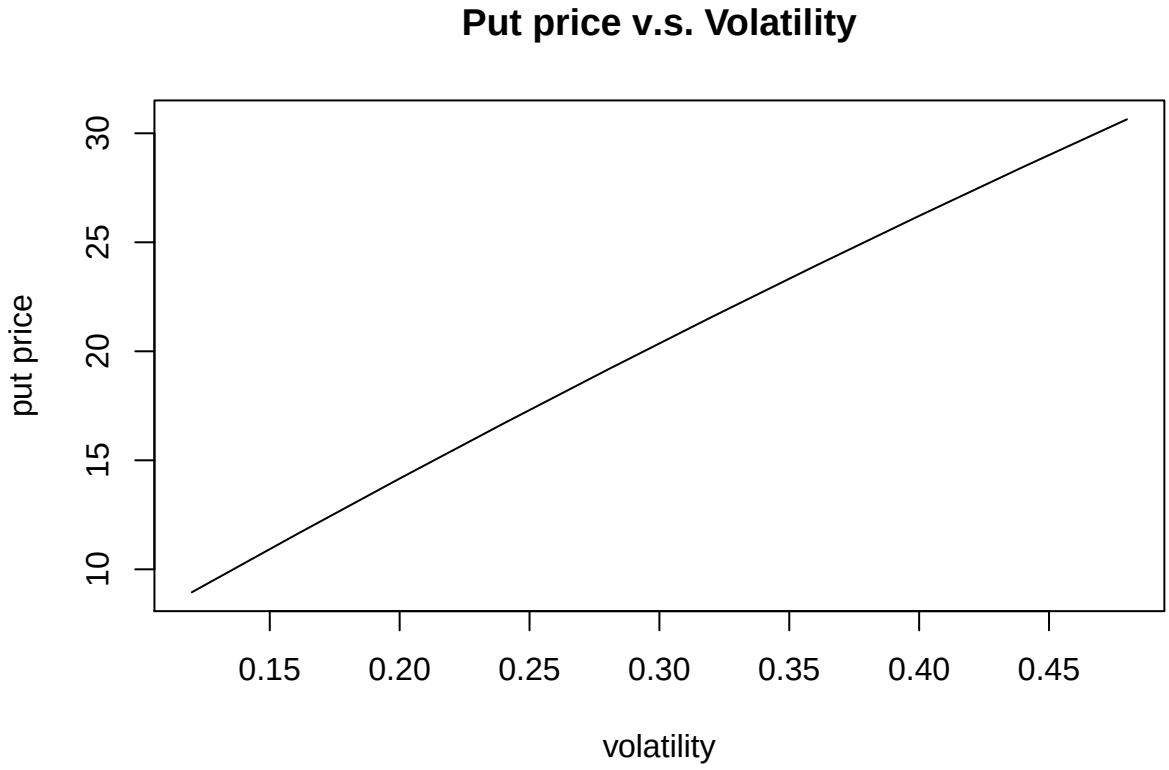
Problem 1

```
df = read.csv('project6_1.csv',header = FALSE)
plot(df[c('V1','V2')], type = 'l',xlab = 'volatility', ylab = 'call price', main = 'Call price v.s. Vola
```




```
plot(df[c('V1','V3')], type = 'l',xlab = 'volatility', ylab = 'put price', main = 'Put price v.s. Volati
```



Problem 2

lambda1 = 0.05 value: 4119.67 default prob: 0.935 expected exercise: 1.24051

lambda1 = 0.1 value: 4342.79 default prob: 0.933 expected exercise: 1.17818

lambda1 = 0.15 value: 4514.31 default prob: 0.948 expected exercise: 1.11591

lambda1 = 0.2 value: 4684.06 default prob: 0.955 expected exercise: 1.10273

lambda1 = 0.25 value: 4810.08 default prob: 0.954 expected exercise: 1.05859

lambda1 = 0.3 value: 5090.41 default prob: 0.977 expected exercise: 1.01207

lambda1 = 0.35 value: 5382.15 default prob: 0.976 expected exercise: 0.978678

lambda1 = 0.4 value: 5434.26 default prob: 0.972 expected exercise: 0.889224

lambda2 = 0 value: 3474.28 default prob: 0.566 expected exercise: 1.12916

lambda2 = 0.1 value: 4444.77 default prob: 0.769 expected exercise: 1.25667

lambda2 = 0.2 value: 4501.19 default prob: 0.858 expected exercise: 1.26507

lambda2 = 0.3 value: 4643.07 default prob: 0.905 expected exercise: 1.20002

lambda2 = 0.4 value: 4684.06 default prob: 0.955 expected exercise: 1.10273

lambda2 = 0.5 value: 4878.86 default prob: 0.976 expected exercise: 0.994236

lambda2 = 0.6 value: 4564.13 default prob: 0.977 expected exercise: 0.928188

lambda2 = 0.7 value: 4485.01 default prob: 0.993 expected exercise: 0.834595

lambda2 = 0.8 value: 4578.11 default prob: 0.995 expected exercise: 0.778218

T = 3 value: 4035.86 default prob: 0.799 expected exercise: 0.984281

T = 4 value: 4591.05 default prob: 0.918 expected exercise: 1.06304

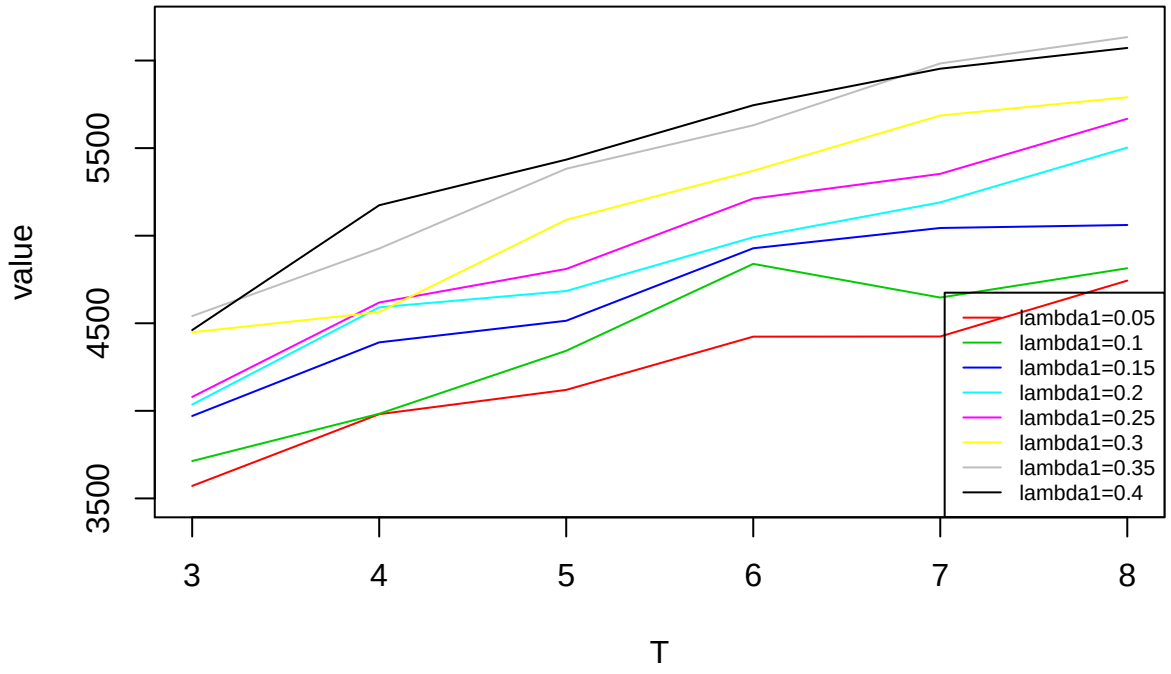
T = 5 value: 4684.06 default prob: 0.955 expected exercise: 1.10273

T = 6 value: 4990.93 default prob: 0.975 expected exercise: 1.09586

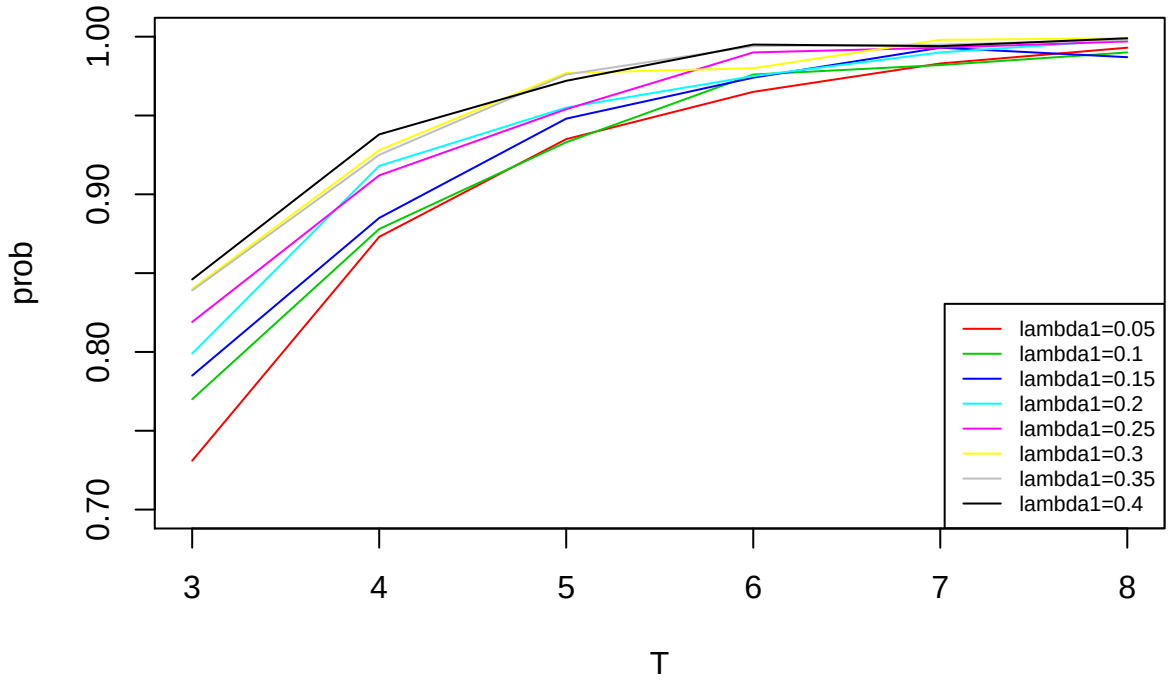
T = 7 value: 5190.21 default prob: 0.99 expected exercise: 1.07782

T = 8 value: 5503.03 default prob: 0.998 expected exercise: 1.00618

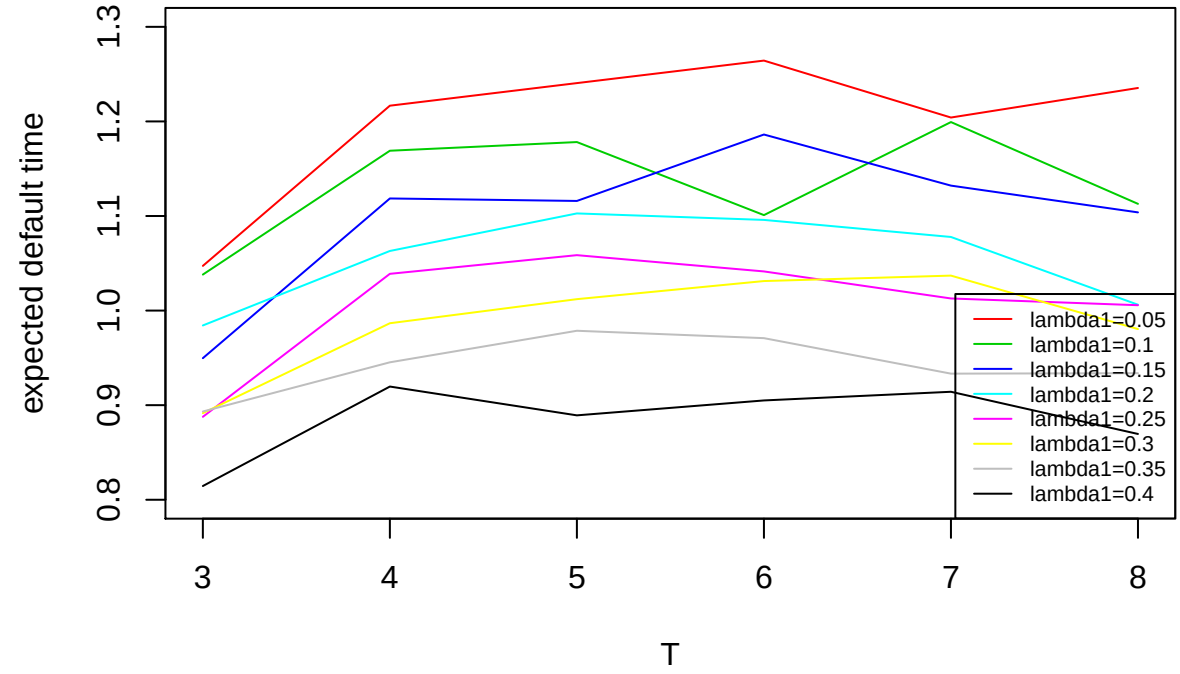
```
plot_func = function(file,y,ylim,is_lambda1_fixed){
  df = read.csv(file)
  plot(df[c(1,2)], type = "l",ylim = ylim,col = 2, xlab = 'T', ylab = y)
  for (i in c(3:9)){
    lines(df[c(1,i)],col = i)
  }
  if (is_lambda1_fixed){
    legend("bottomright", legend = c("lambda2=0.1", "lambda2=0.2", "lambda2=0.3", "lambda2=0.4", "lambda
  }
  else{
    legend("bottomright", legend = c("lambda1=0.05", "lambda1=0.1", "lambda1=0.15", "lambda1=0.2", "lam
  }

}
plot_func("project6_2a.csv","value", c(3500,6200),FALSE)
```



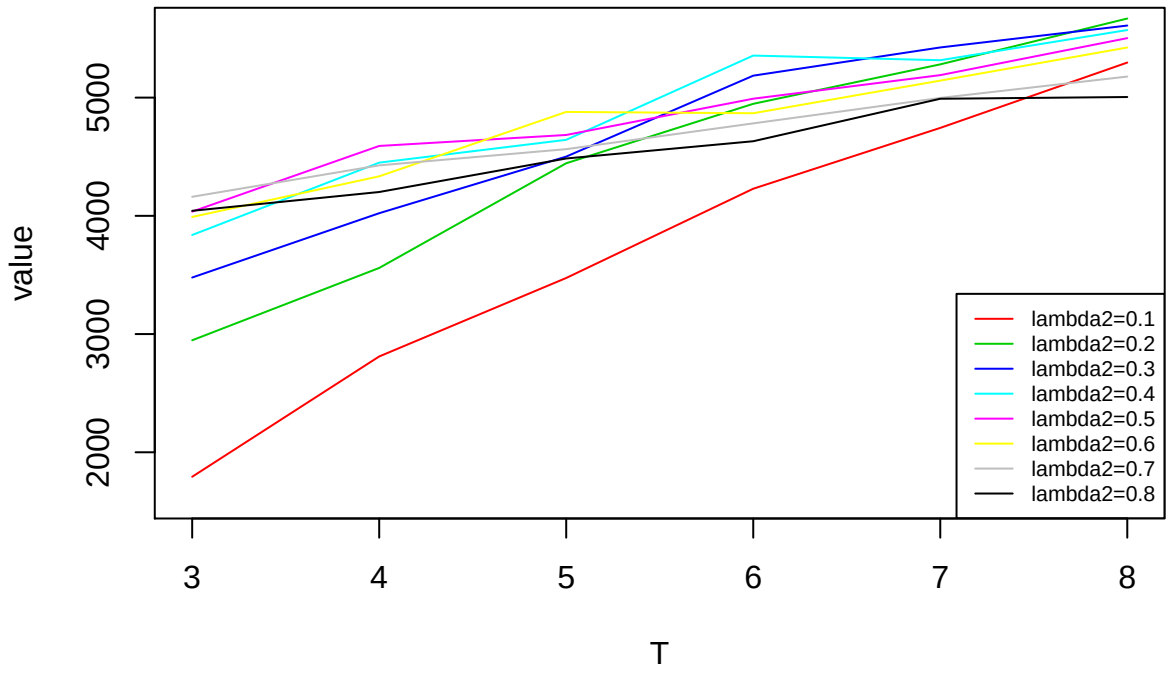

```
plot_func("project6_2b.csv","prob", c(0.7,1),FALSE)
```



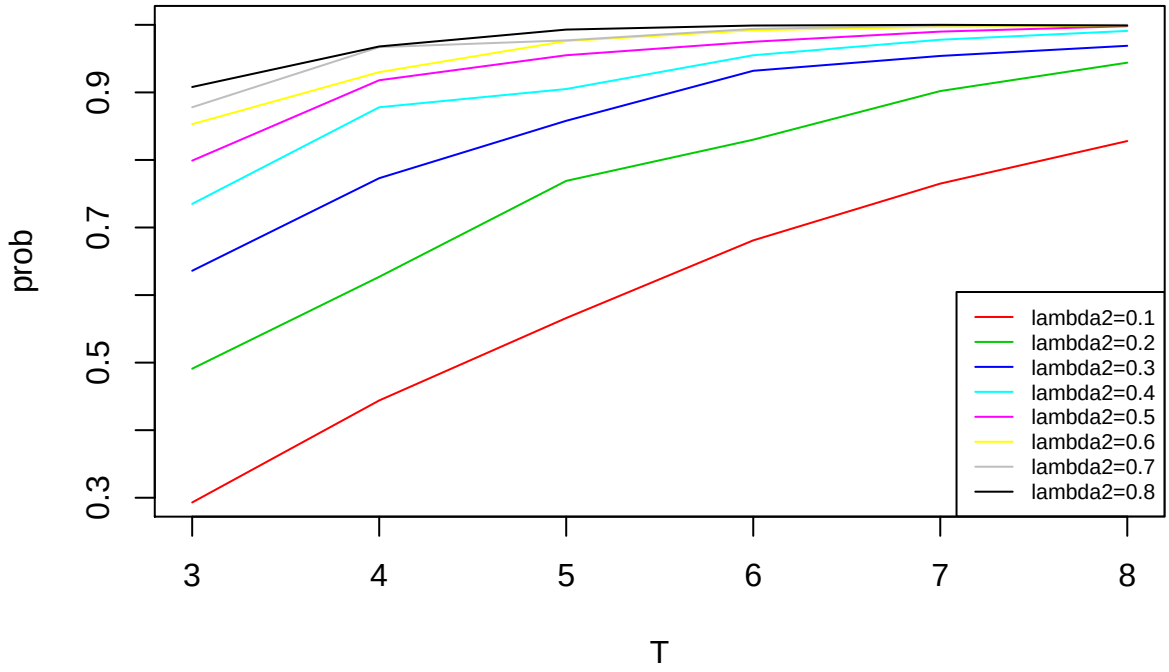

```
plot_func("project6_2c.csv","expected default time", c(0.8,1.3),FALSE)
```



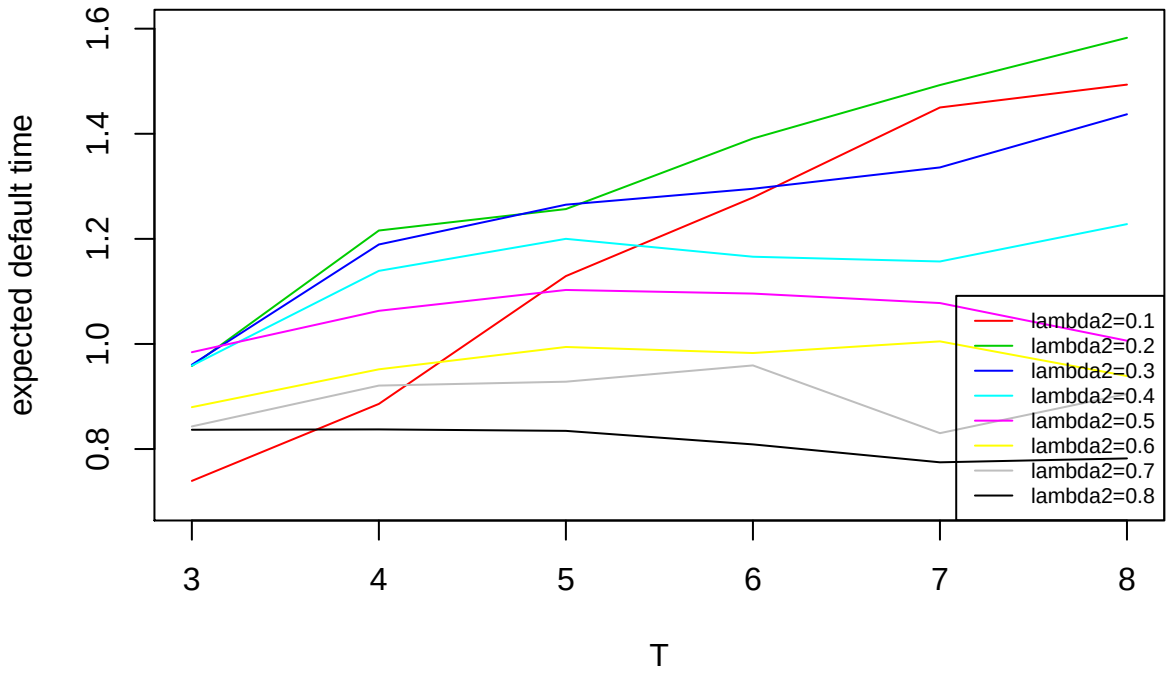

```
plot_func("project6_2d.csv","value",c(1600,5600),TRUE)
```




```
plot_func("project6_2e.csv","prob",c(0.3,1),TRUE)
```




```
plot_func("project6_2f.csv","expected default time",c(0.7,1.6),TRUE)
```


expected default time
0.8
1.0
1.2
1.4
1.6
3
4
5
6
7
8
T
lambda2=0.1
lambda2=0.2
lambda2=0.3
lambda2=0.4
lambda2=0.5
lambda2=0.6
lambda2=0.7
lambda2=0.8