Problem 2:
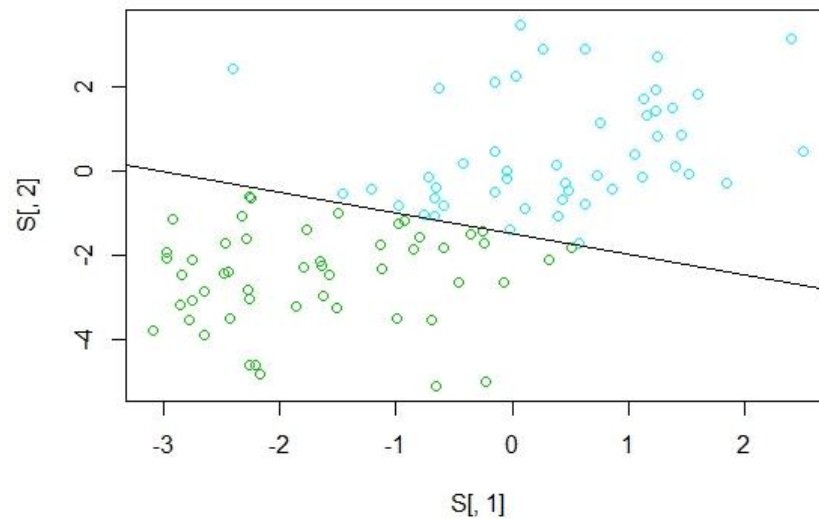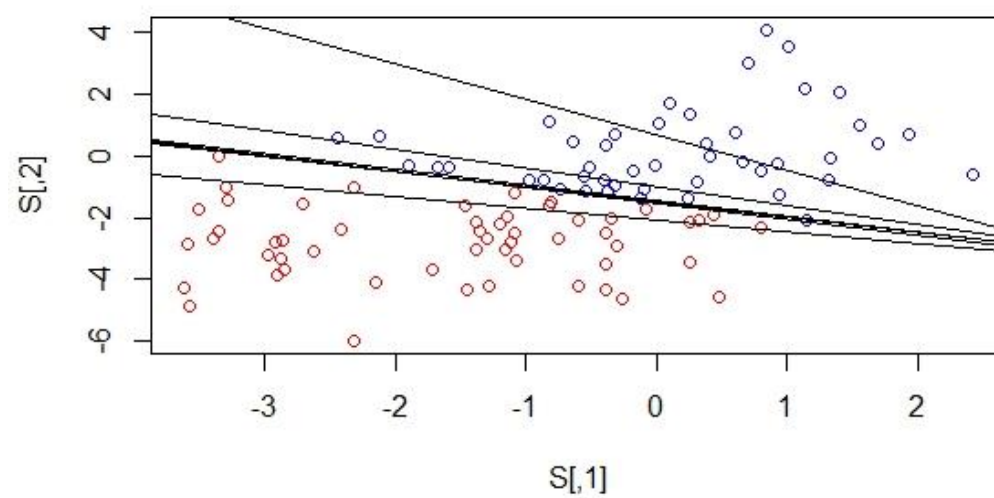
Plot1: test data set and the classifier hyperplane

Plot2: training data and the trajectory of the algorithm by visualizing Z_history
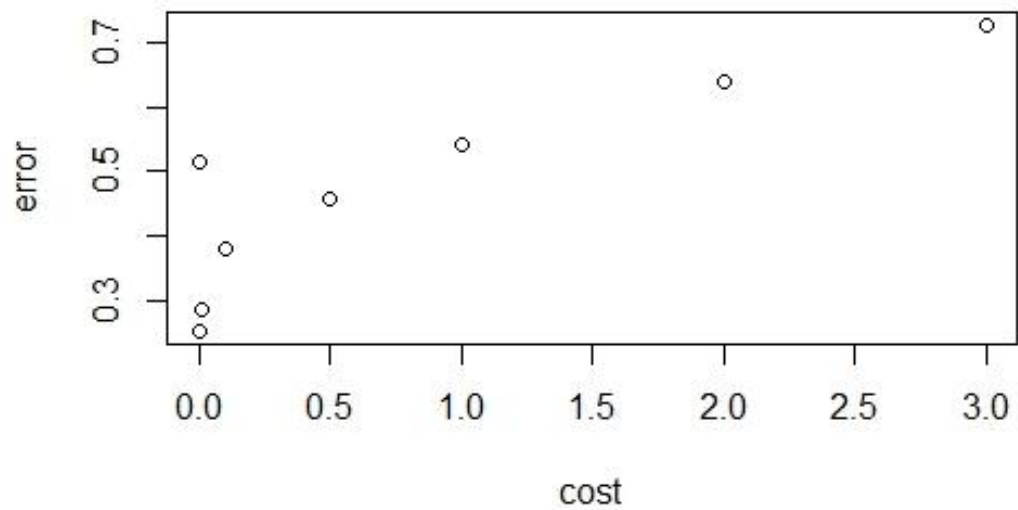
```
> Z_history
      [,1]        [,2]        [,3]
[1,]  0.3365569   0.8864816   1.833614
[2,] 12.3003394  10.7040533  -7.166386
[3,]  5.1432314   8.4507385   8.333614
[4,]  3.4720853   6.6966396  10.333614
[5,]  3.5516780   7.0383596  10.083614
[6,]  3.3643554   6.8415381  10.283614
```
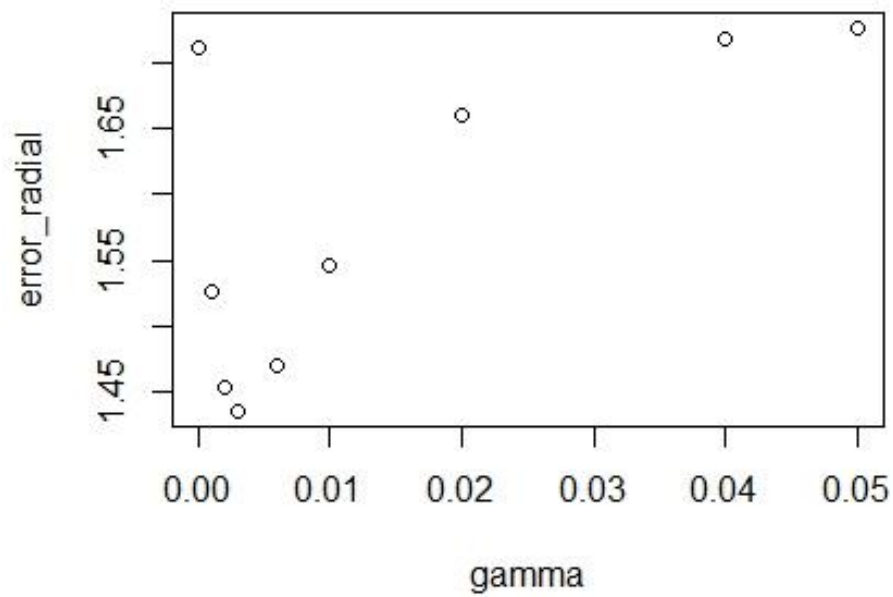
Problem 3

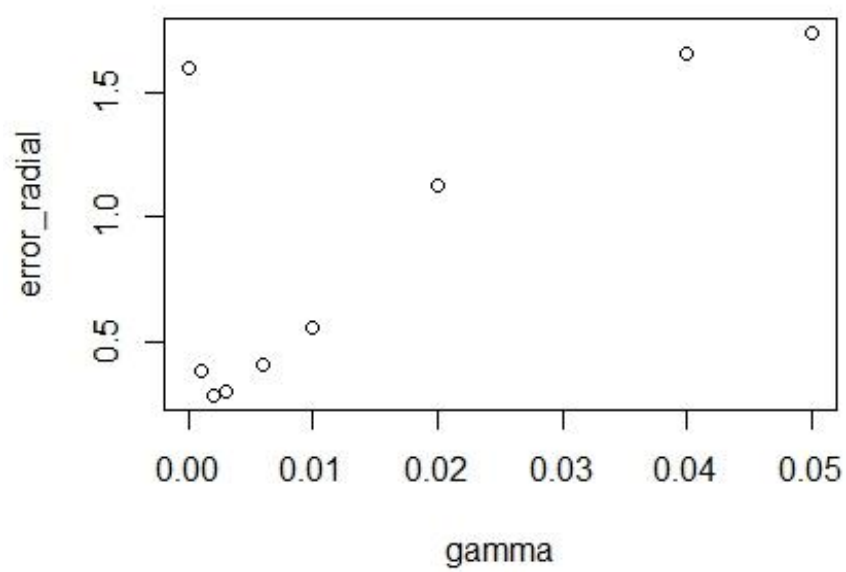1. a) misclassification rate and margin parameter in linear case:

b) In non-linear case:
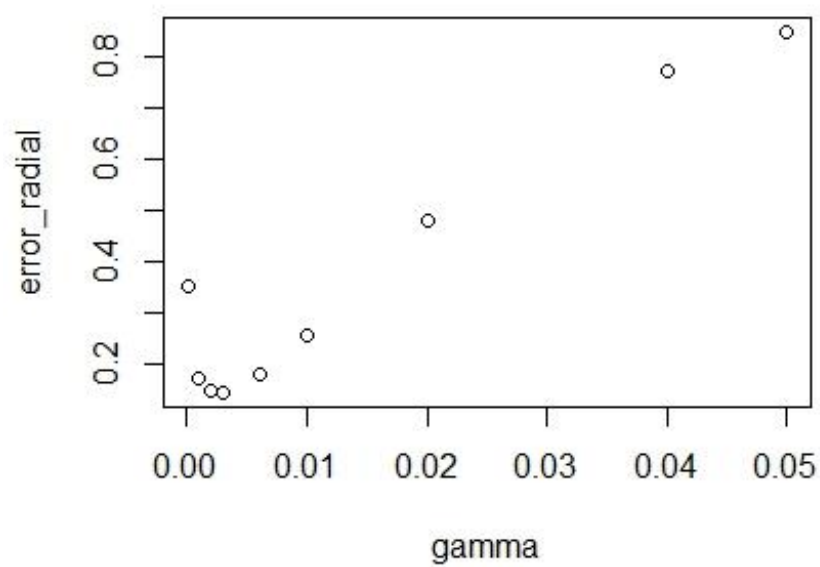
firstly we fixed cost each time and test different gamma:
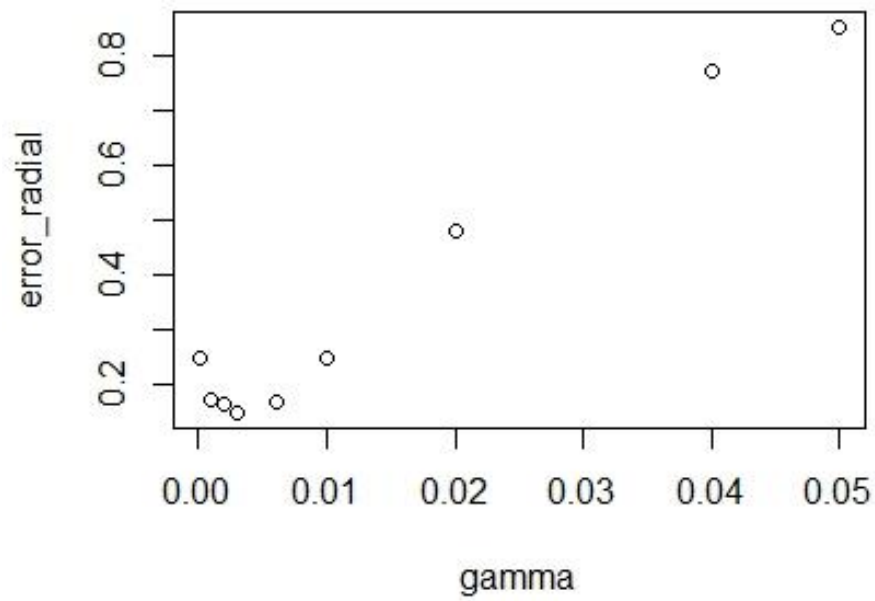
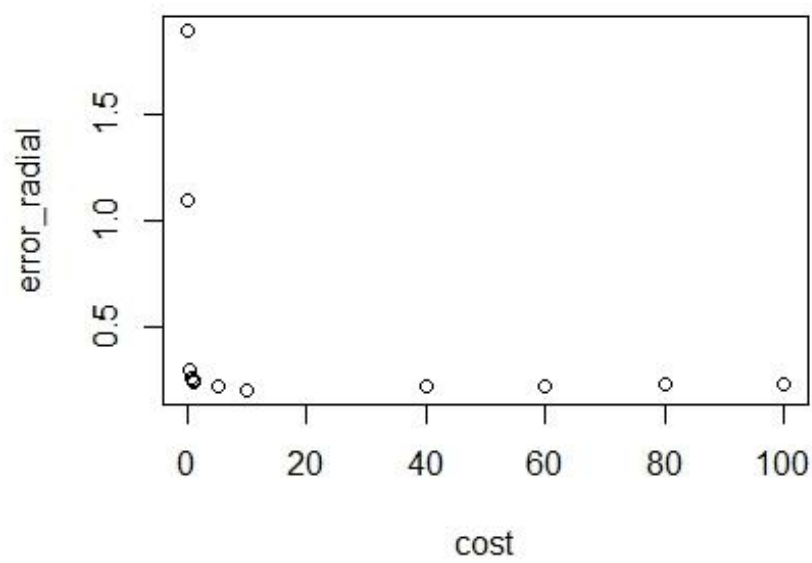**cost=0.01**

Cost=0.1

Cost=1

Cost=10

Cost=100
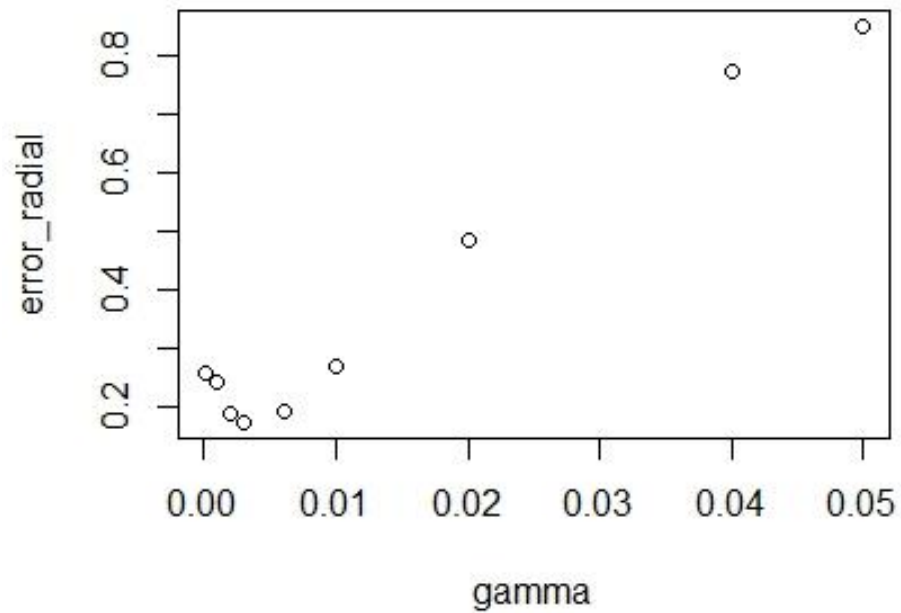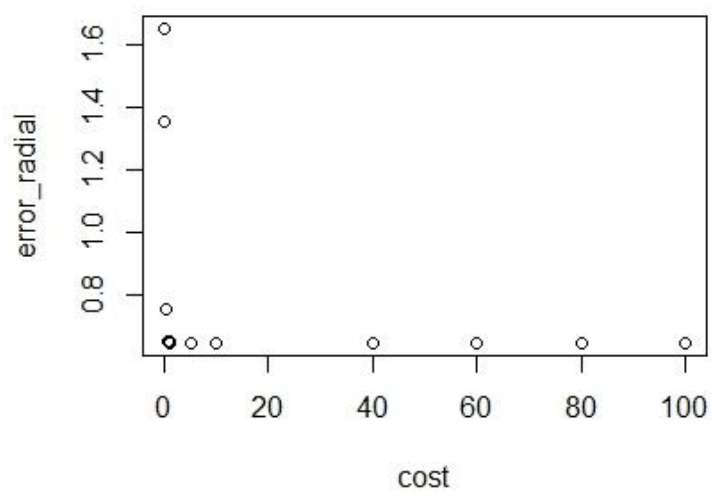

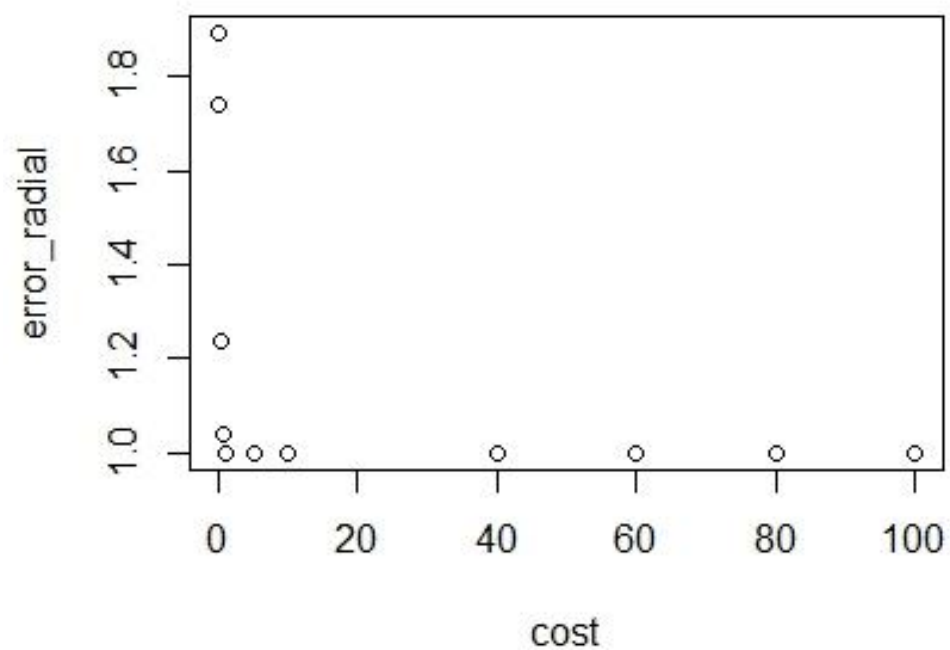Then fixed gamma each time to test different cost

Gamma=0.0003

Gamma=0.003
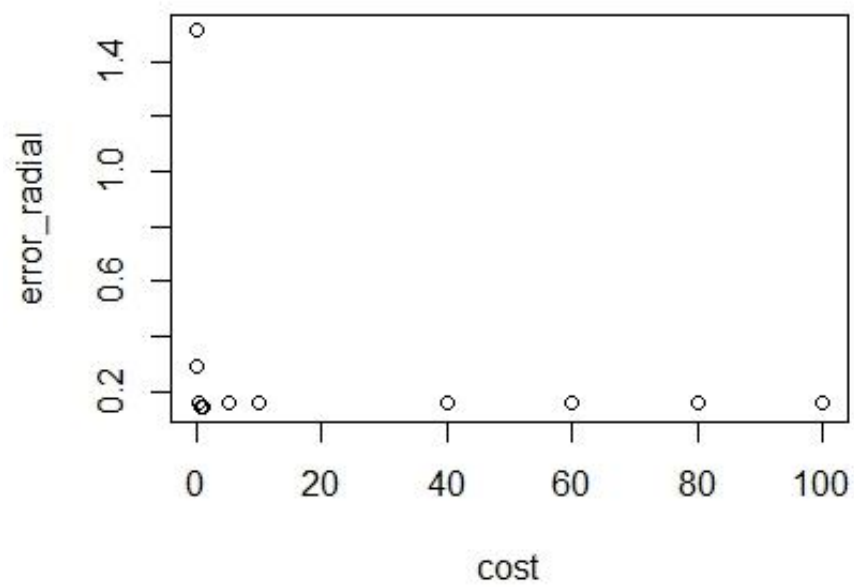
Gamma=0.03

Gamma=0.3

2. In the linear case, I choose cost=0.01.
   In the non-linear case, I choose cost=1 and gamma=0.003.
   Finally, the misclassification rates for linear and non-linear classifier are 0.075 and 0.025.
   So we should use non-linear one.