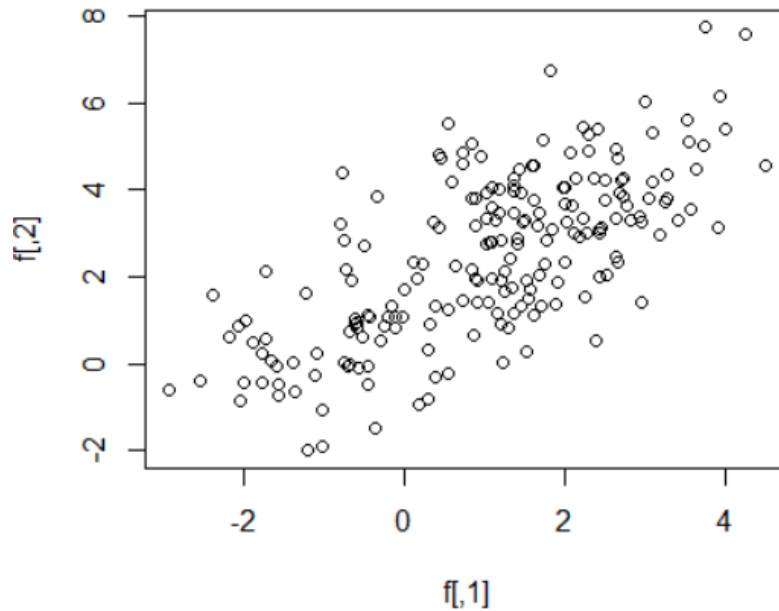


**Q1**

依照作業給定參數產生 200 個點



**Q2**

下圖為 fitting 結果，估計的參數與原本的相似

AR coefficient matrix

AR( 1 )-matrix

	[,1]	[,2]
[1,]	0.278	0.301
[2,]	-0.435	1.141

MA coefficient matrix

MA( 1 )-matrix

	[,1]	[,2]
[1,]	0.209	-0.131
[2,]	0.341	-0.164

Residuals cov-matrix:

	[,1]	[,2]
[1,]	1.769394	0.991165
[2,]	0.991165	1.014212

----

aic= -0.1280926

bic= 0.003840131

✓ |

### Q3

依照給定參數產生 200 個資料點 (因資料是三維所以沒有畫圖)

1	-0.43510502	-0.71195927	-2.555792557
2	1.55988782	2.42011807	0.729712757
3	0.19502974	0.97219483	0.108017277
4	0.47509099	-0.97671194	0.535721191
5	1.08711839	-1.10200664	-0.994417817
6	2.79621255	1.88237845	-0.332438399
7	2.95150910	4.58743384	-0.163825227
8	1.92147698	4.55566244	0.649125392
9	2.43751555	4.71569886	-0.226174064
10	0.69228551	4.65858819	0.643836223
11	4.38909730	4.20504779	0.477438628
12	1.72969521	1.98715183	1.231232822
13	2.16341538	1.80325537	-0.022070048
14	4.19889292	3.93270010	-1.525554964
15	5.31669082	3.91367489	0.589768618
16	3.63769744	7.14269158	2.455371682
17	-1.80344827	-0.76624909	0.927771560
18	-1.27700682	-0.49446989	0.101577283
19	2.58304511	1.67142034	-2.125602187
20	-3.11588094	-2.32827054	-0.586964657
21	-0.15162129	-1.25729242	0.025769522
22	0.61340131	0.53186593	0.501805975
23	1.27458266	0.51225747	1.154221908
24	2.88673058	0.11641888	0.388503855

### Q4

下圖為找到的 PC1,PC2

```
> pc
      PC1      PC2
[1,] 0.7030589 -0.07524476
[2,] 0.7029946 -0.07645781
[3,] 0.1072699  0.99422957
```

下圖為 fit 的 model summary

```
> round(factor_model[,2])
      [,1] [,2] [,3]
[1,]  0.5  0.5   0
[2,]  0.5  0.5   0
[3,]  0.0  0.0   1
> summary(factor_model)
      v1      v2      v3
Min.   :0.0006065 Min.   : -0.0006064 Min.   : -0.0006064
1st Qu.:0.2502800 1st Qu.: 0.2496966 1st Qu.: 0.0000000
Median :0.4999536 Median : 0.4999996 Median : 0.0006065
Mean   :0.3335199 Mean   : 0.3331468 Mean   : 0.3333331
3rd Qu.:0.4999766 3rd Qu.: 0.5000234 3rd Qu.: 0.5003029
Max.   :0.4999996 Max.   : 0.5000472 Max.   : 0.9999993
```