

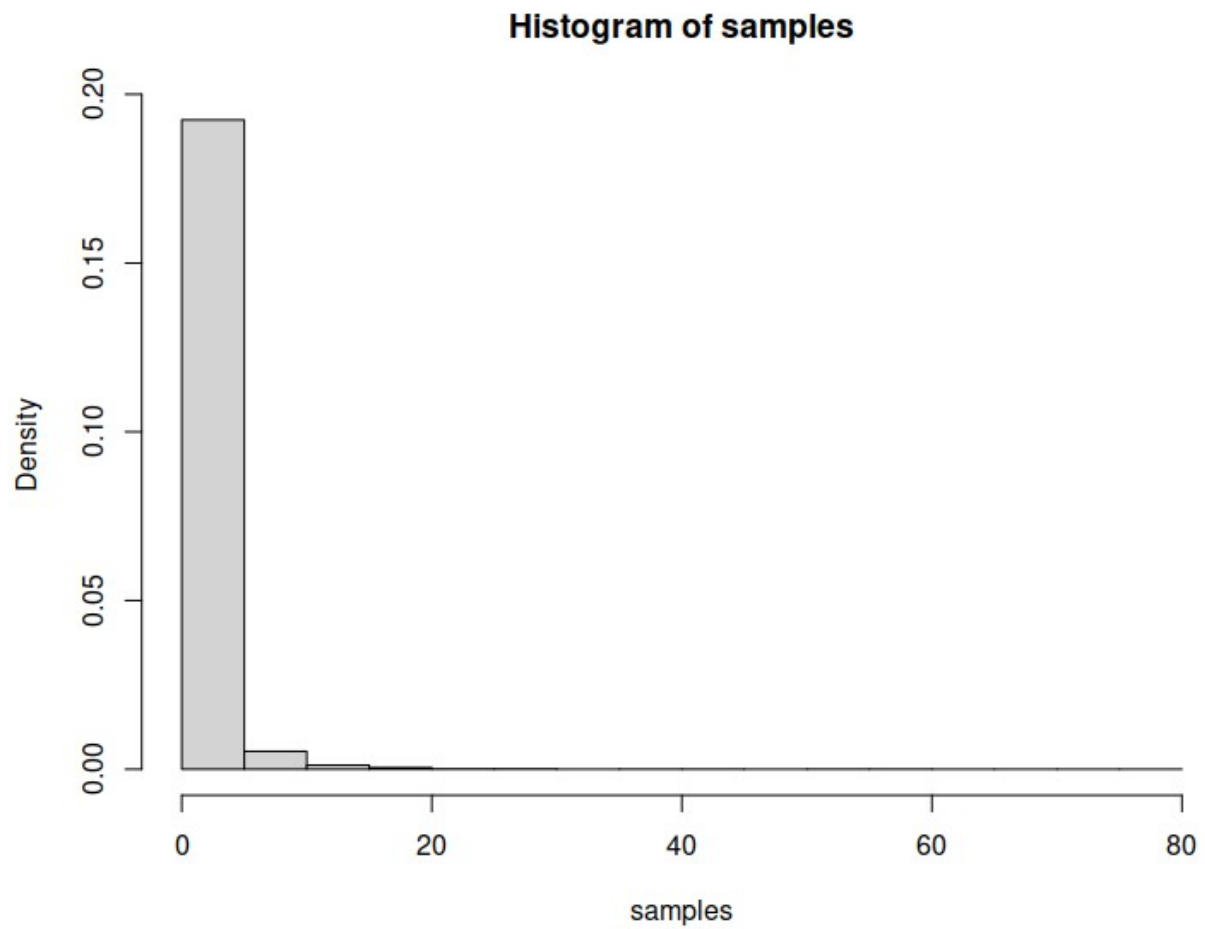
## Code outputs from midterm exam

1.

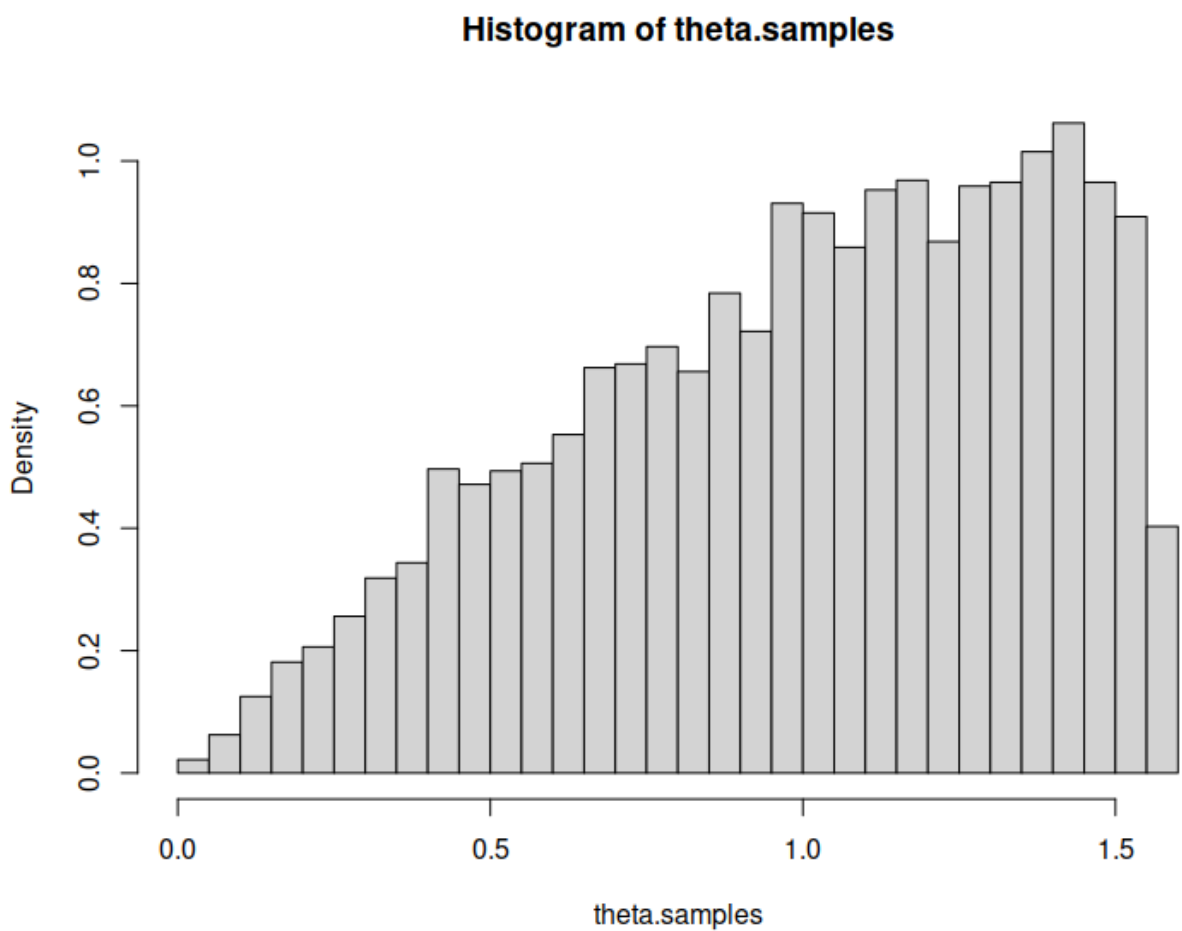
```
MC-estimate using uniform dist: 0.9828225  
MC-estimate using normal dist: 1.006985
```

2.

a)

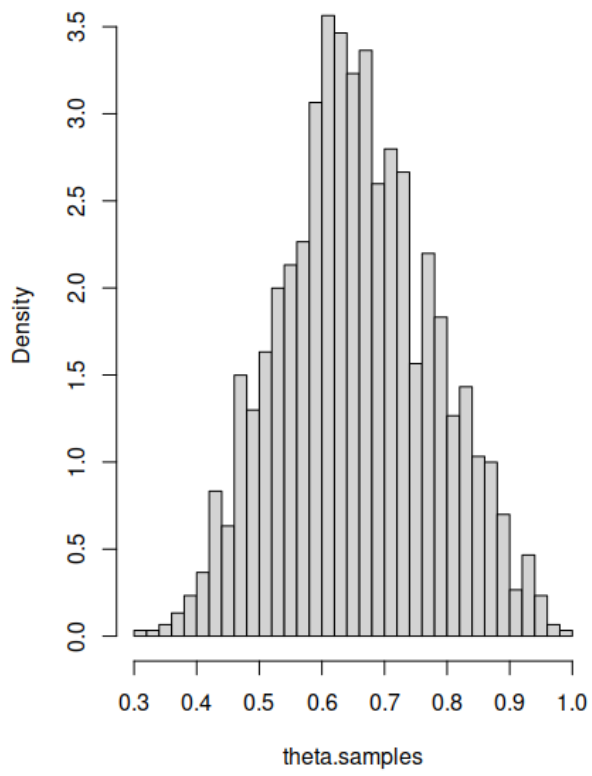


b)

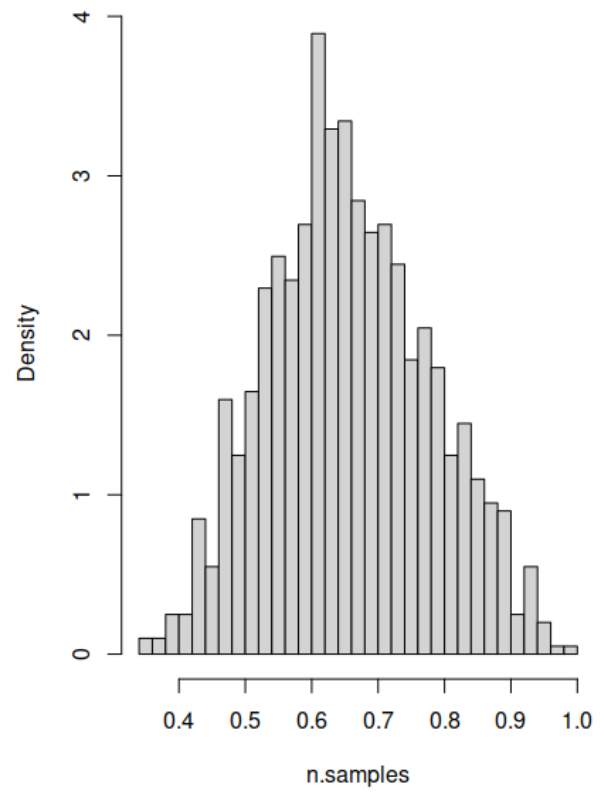


3.

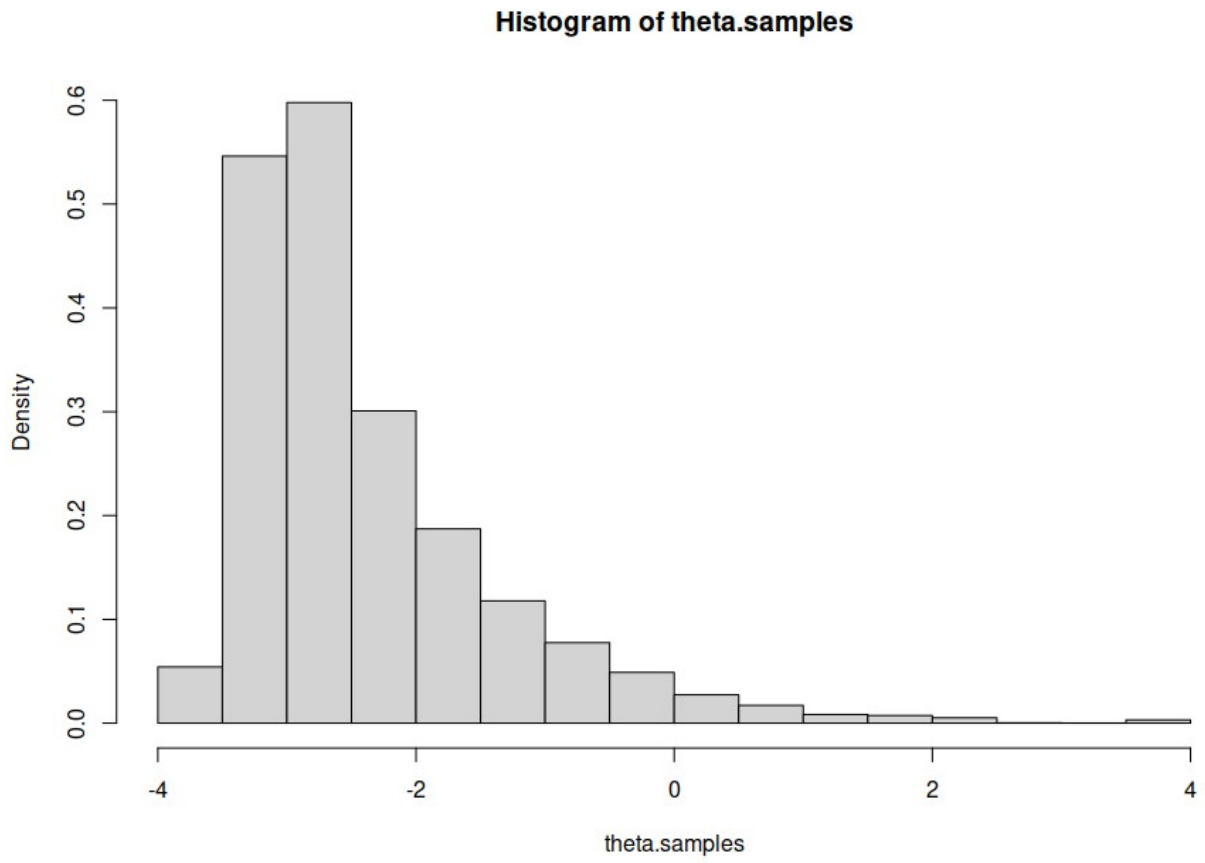
**Histogram of theta.samples**



**Histogram of n.samples**



4.



5.

a)

Iterations = 2010:12000

Thinning interval = 10

Number of chains = 3

Sample size per chain = 1000

1. Empirical mean and standard deviation for each variable,  
plus standard error of the mean:

	Mean	SD	Naive SE	Time-series SE
b11	-1.90043	0.045983	8.395e-04	8.393e-04
b12	0.08181	0.004270	7.796e-05	7.501e-05
b21	-1.91940	0.058587	1.070e-03	1.055e-03
b22	0.08970	0.004800	8.763e-05	8.541e-05
b31	-1.61372	0.017689	3.229e-04	3.044e-04
b32	0.08190	0.001939	3.540e-05	3.541e-05
b41	-1.35647	0.020915	3.819e-04	3.820e-04
b42	0.08687	0.002279	4.161e-05	4.104e-05

2. Quantiles for each variable:

	2.5%	25%	50%	75%	97.5%
b11	-1.98890	-1.93112	-1.90113	-1.86996	-1.81023
b12	0.07320	0.07901	0.08169	0.08461	0.09022
b21	-2.03696	-1.95833	-1.91909	-1.87934	-1.80724
b22	0.08033	0.08646	0.08971	0.09279	0.09951
b31	-1.64800	-1.62550	-1.61360	-1.60195	-1.57873
b32	0.07810	0.08056	0.08193	0.08317	0.08581
b41	-1.39759	-1.37048	-1.35639	-1.34260	-1.31468
b42	0.08228	0.08538	0.08689	0.08841	0.09127