Chapter 2 — Notes

3.1 Sampling from a grid-approximate posterior

- R Code 3.2:

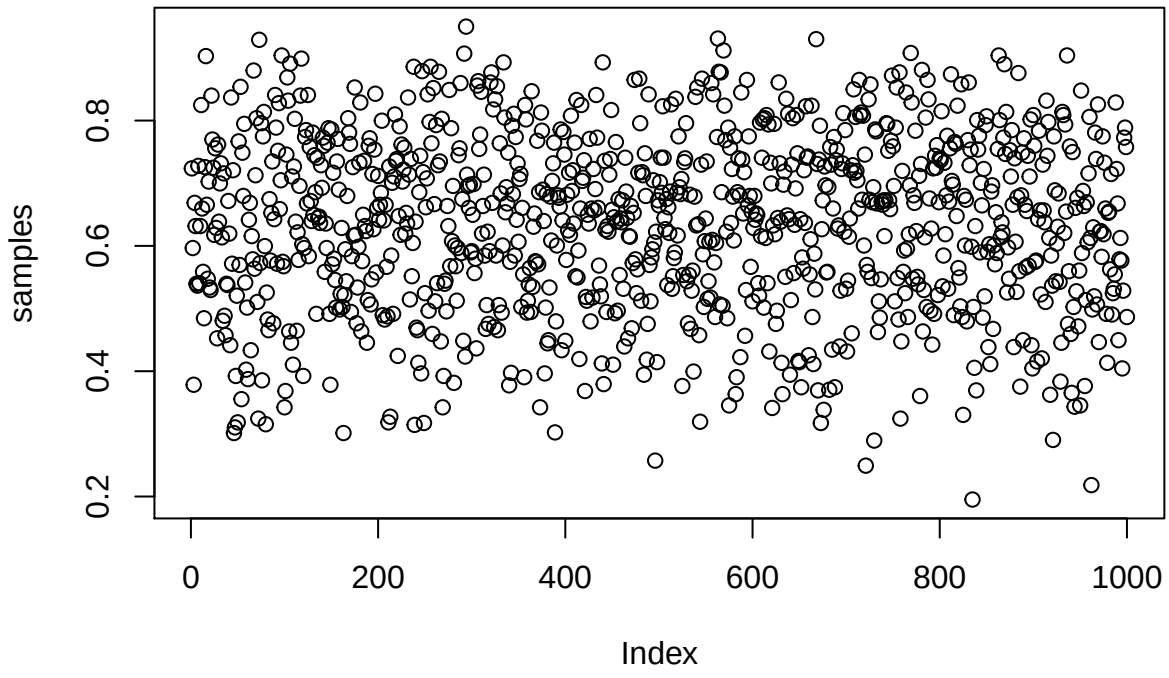
```
n = 1000
p_grid <- seq(from=0, to=1, length.out=n)
prior <- rep(1, n)
likelihood <- dbinom(x=6, size=9, prob=p_grid)
posterior_notnorm <- likelihood * prior
posterior <- posterior_notnorm / sum(posterior_notnorm)
```

Draw 10,000 samples: * R Code 3.3:

```
samples <- sample(p_grid, prob=posterior, size=n, replace=T)
```

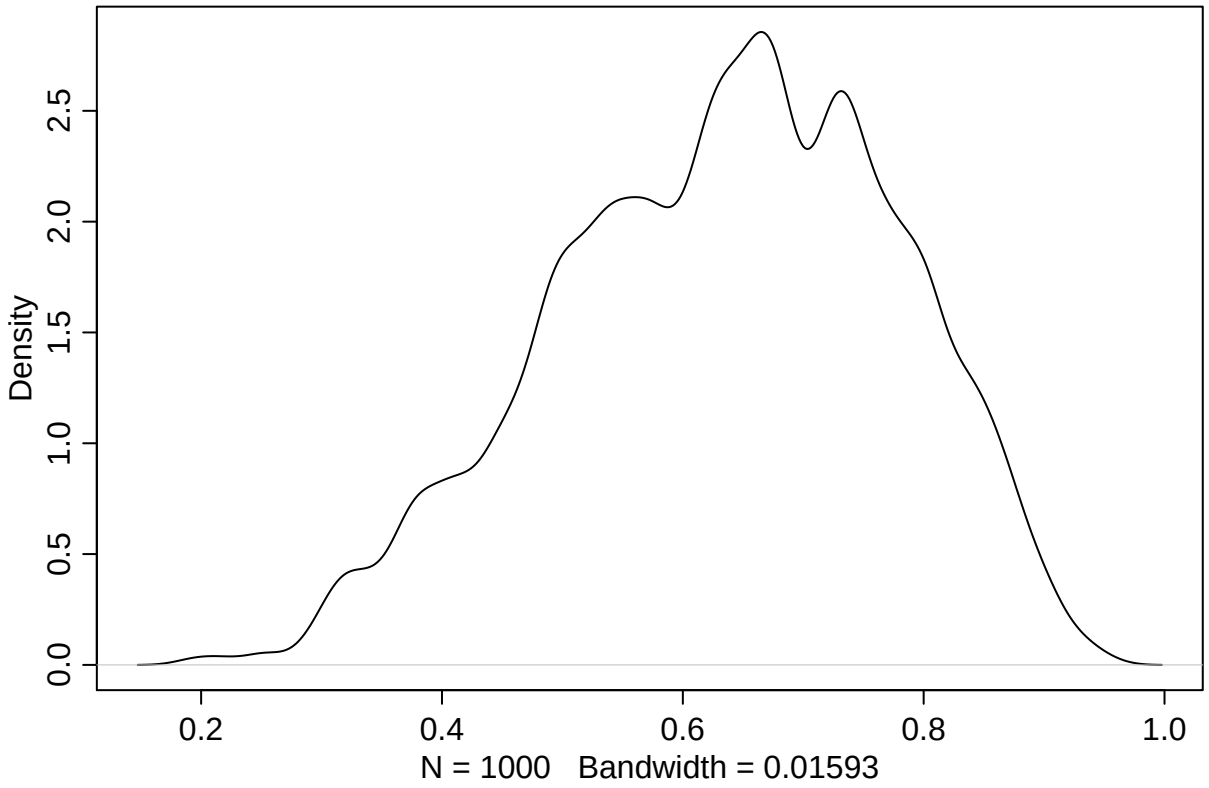
- 3.4:

```
plot(samples)
```



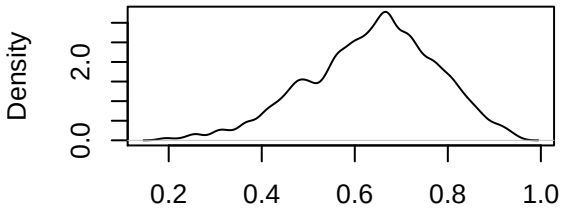
- 3.5:

```
dens(samples)
```

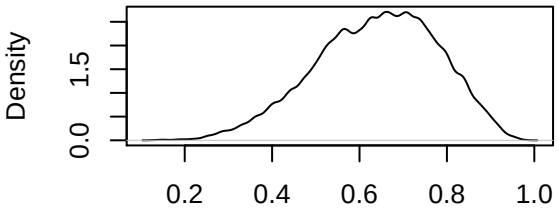


Let's try more samples:

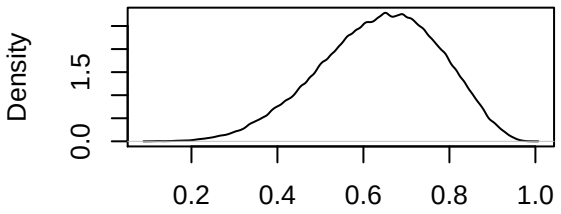
```
par(mfrow=c(2, 2))
dens(sample(p_grid, prob=posterior, size=1e3, replace=T))
dens(sample(p_grid, prob=posterior, size=1e4, replace=T))
dens(sample(p_grid, prob=posterior, size=1e5, replace=T))
dens(sample(p_grid, prob=posterior, size=1e6, replace=T))
```



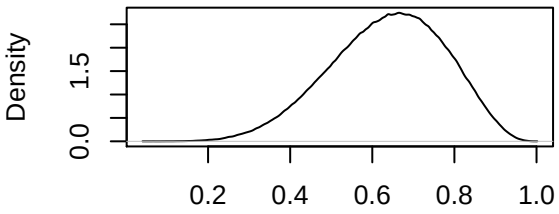
N = 1000 Bandwidth = 0.01516



N = 10000 Bandwidth = 0.009936



N = 100000 Bandwidth = 0.00623



N = 1000000 Bandwidth = 0.003947