677-assignment

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## Creating the function $\alpha(p)$

```r
alpha_p = function(n,m,p){
  a= 0
  for(k in m:n){
    a = a+dbinom(k, size = n, p)
  }
  return(a)
}
```

Plot

```r
n = 100
x1 = seq(0.4,1,by = 0.001)

y1 = alpha_p(n,69,x1)
y2 = alpha_p(n,73,x1)
y3 = alpha_p(n,68,x1)
y4 = alpha_p(n,74,x1)
dat = data.frame(x1, y1, y2, y3, y4)

r1 = c(0.6,0.6,0.8,0.8,0.6)
r2 = c(0.05,0.95,0.95, 0.05, 0.05)
rec = data.frame(x = r1, y = r2)


ggplot(data =dat) +
  geom_line(aes(x = x1, y = y1)) +
  geom_line(aes(x = x1, y = y2))+
  geom_path(aes(x = r1, y = r2), data = rec) +
  xlab("p")+ ylab("alpha(p)")
```
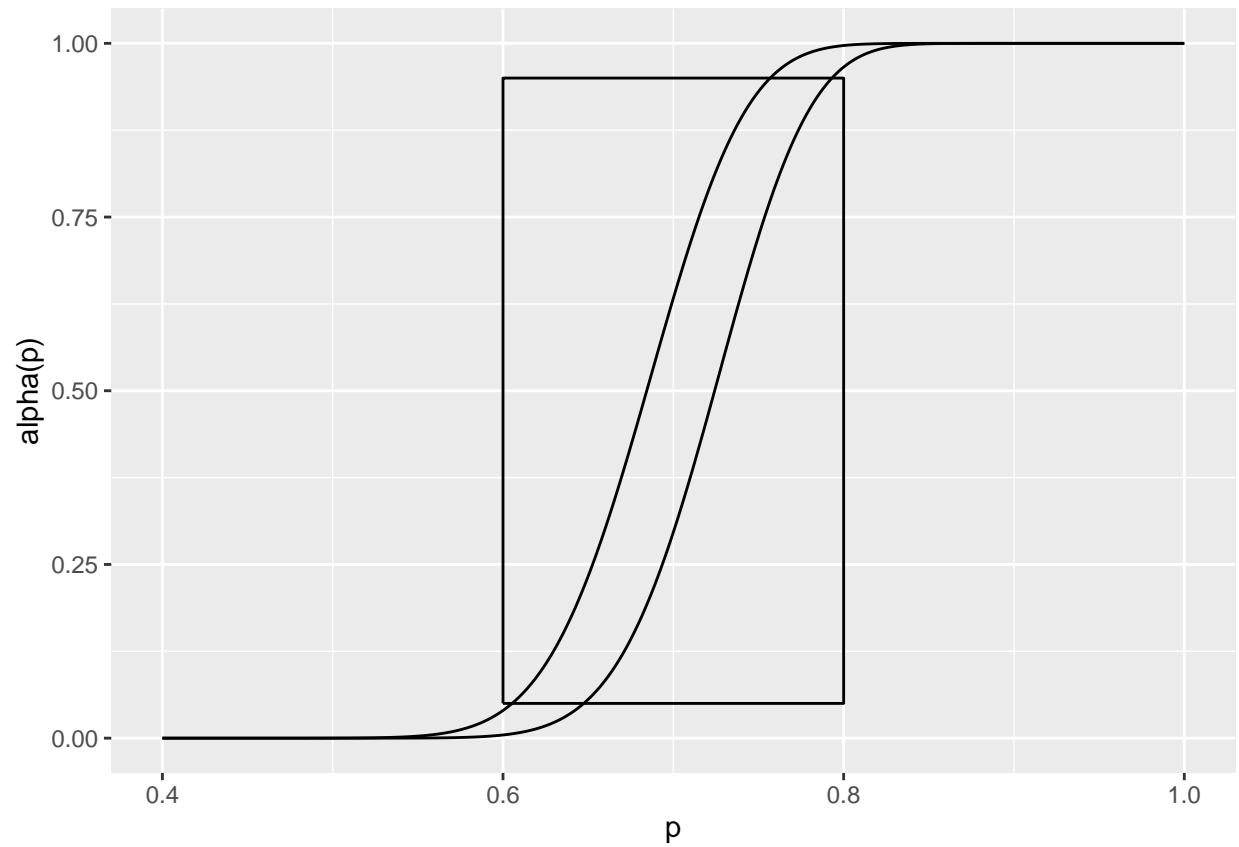
```r
ggplot(data =dat) +
  geom_line(aes(x = x1, y = y1))+
  geom_line(aes(x = x1, y = y2))+
  geom_line(aes(x = x1, y = y3), color = "red")+
  geom_line(aes(x = x1, y = y4),  color = "red")+
  geom_path(aes(x = r1, y = r2), data = rec) +
  xlab("p")+ ylab("alpha(p)")
```
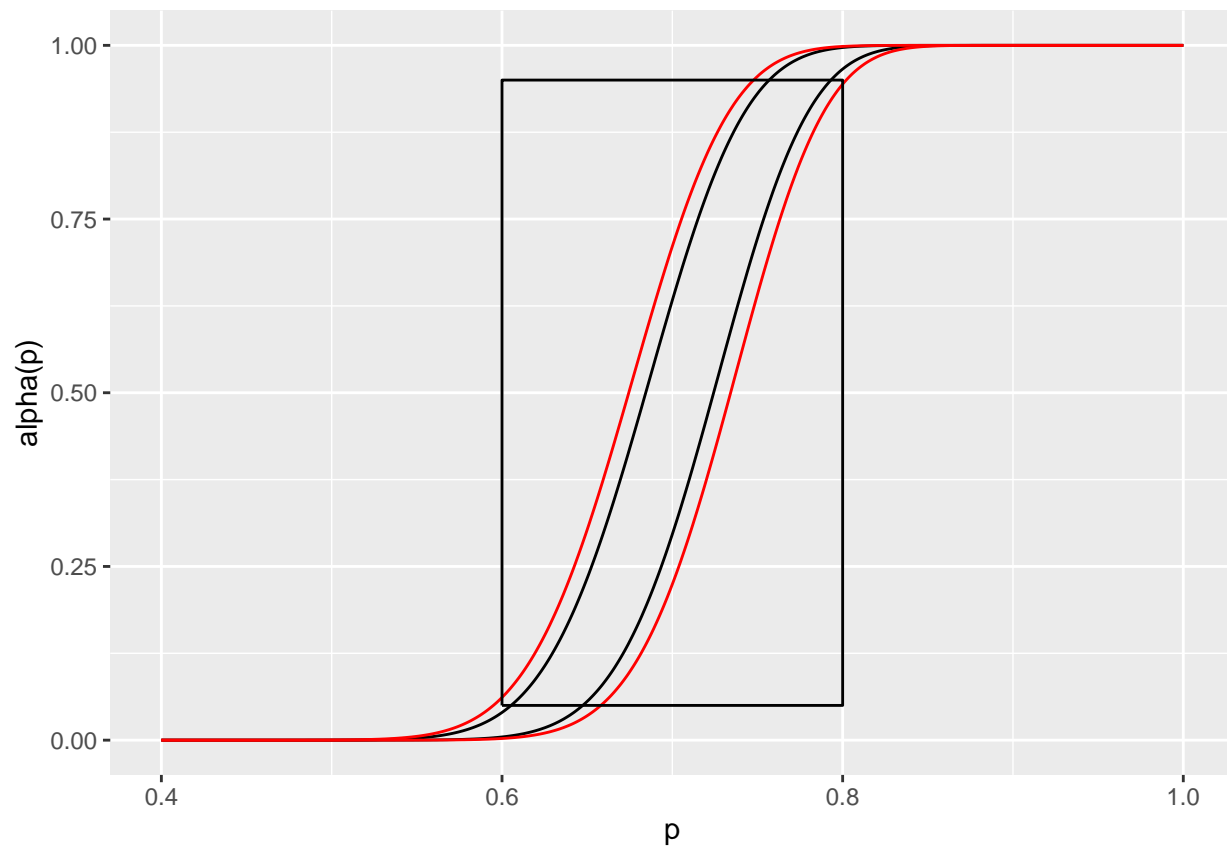
The two red lines in the second graph represent the function $\alpha(p)$ with the critical value m = 68 and m = 74 respectively. Both of them are either outside the bottom line or outside the top line. Therefore the critical value should be between 69 and 73.