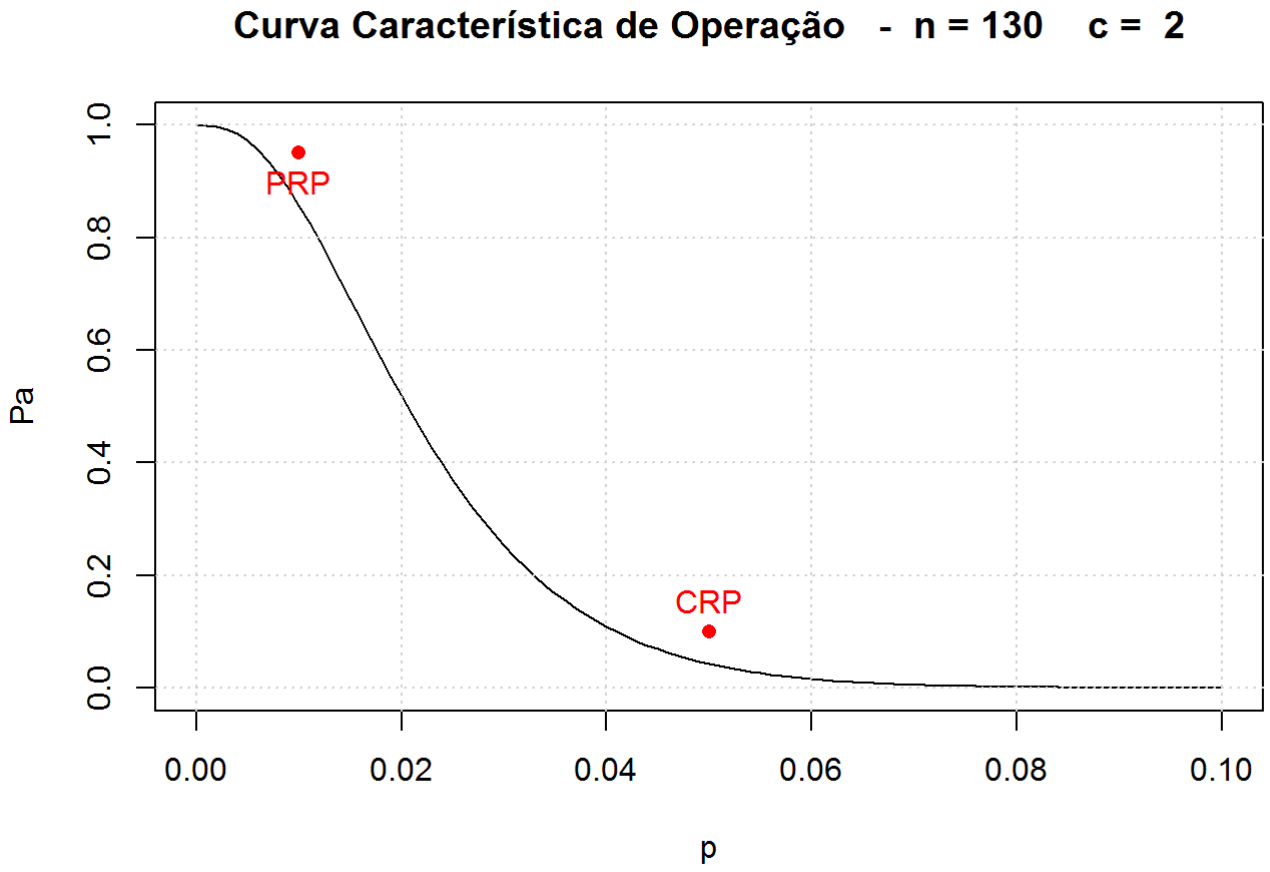
P1_05.R

Walter

Mon Jul 09 19:35:04 2018

```
# Problema da Prova - Questão 5 - 1º sem. 2018
#
# Inspecao por amostragem
#
# Dados do Problema:
#
# Modelo: Distribuicao Poisson
#
# x = numero de pecas defeituosas
#
# N = 30000 (tamanho do lote)
# po = 0.005 (qualidade declarada pelo fornecedor)
#
# Criterio
# AQL = 1% (nivel de qualidade aceitavel)
# alpha = 5% (risco do fornecedor)
# LTPD = 5% (porcentagem de defeituosas admissivel no lote - qualidade limite)
# beta = 10% (risco do consumidor)
#
# Plano de Amostragem por Atributos - Simples
# n = 130 pecas (tamanho da amostra)
# c = 2 (Ac - numero de aceitacao)
#

# Cotia, 09.07.2018
# Walter Ponge-Ferreira

# Dados do problema
N <- 30000
p0 <- 0.01
alpha <- 0.05
p1 <- 0.05
beta <- 0.10

# Plano de amostragem
n <- 130
c <- 2

p <- seq(0,0.1,0.001)
lambda <- p*n

Pa <- ppois(c, lambda)
plot(p,Pa, type = 'l', ylim = c(0,1.0),
     main = paste('Curva Característica de Operação   -  n =',n, '   c = ',c))
grid()
points(c(p0,p1),c(1-alpha,beta), pch = 16, col = 'red')
text(c(p0,p1),c(1-alpha,beta),pos=c(1,3),c('PRP','CRP'), col = 'red')
```




```
# Pa(p = p0)
(lambda <- p0 * n)
```

```
## [1] 1.3
```

```
(Pa <- ppois(c, lambda))
```

```
## [1] 0.8571125
```

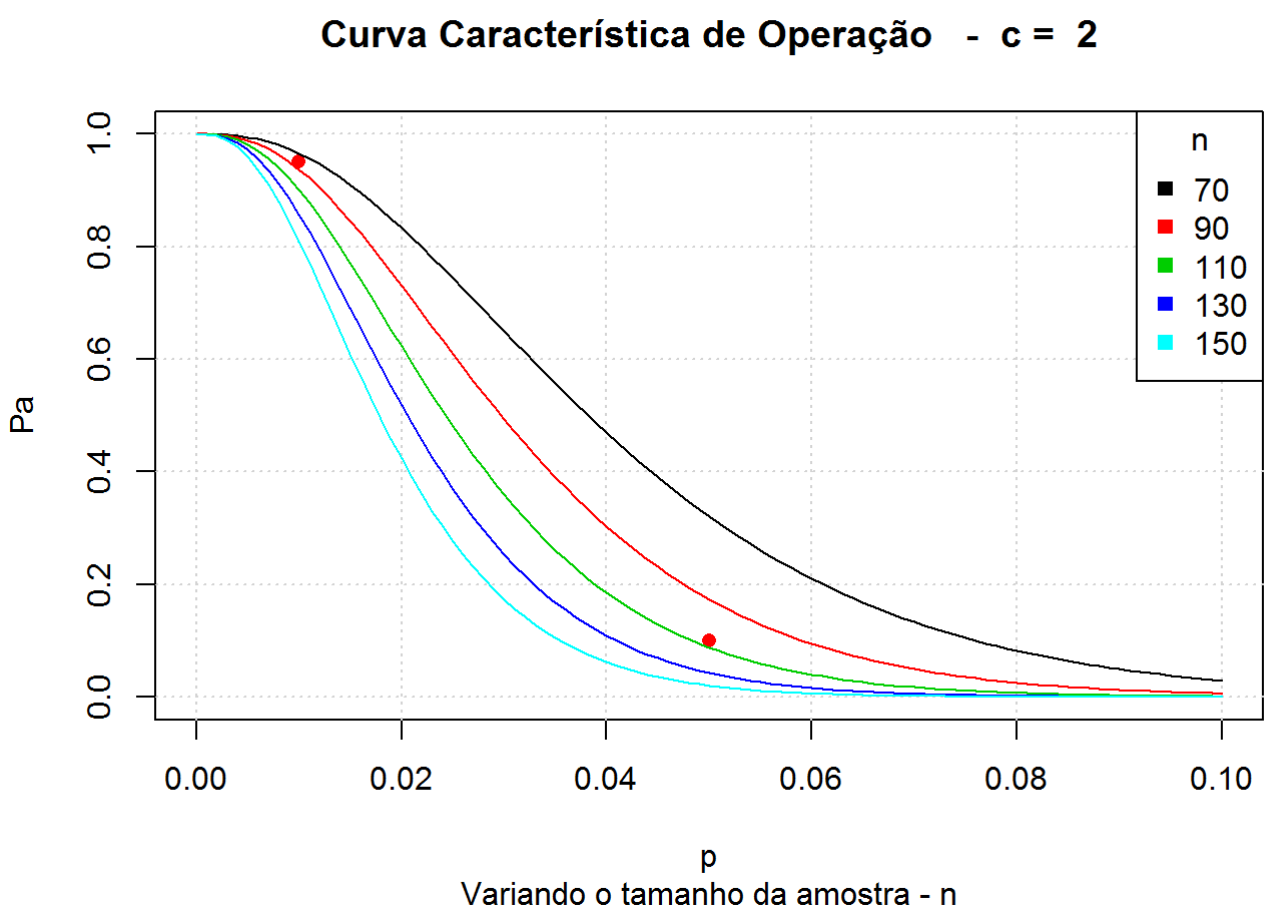
```
# Pa(p = p1)
(lambda <- p1 * n)
```

```
## [1] 6.5
```

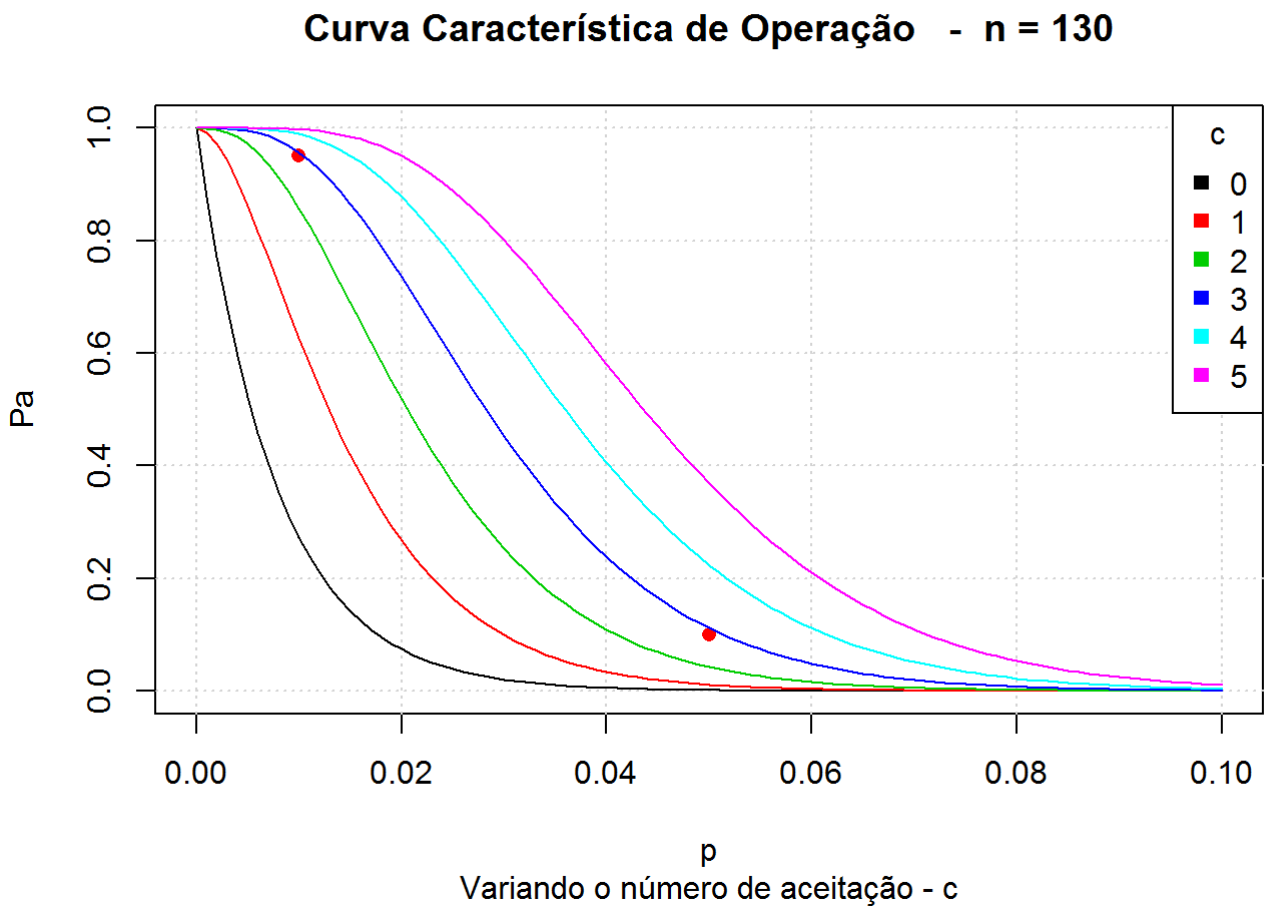
```
(Pa <- ppois(c, lambda))
```

```
## [1] 0.04303595
```

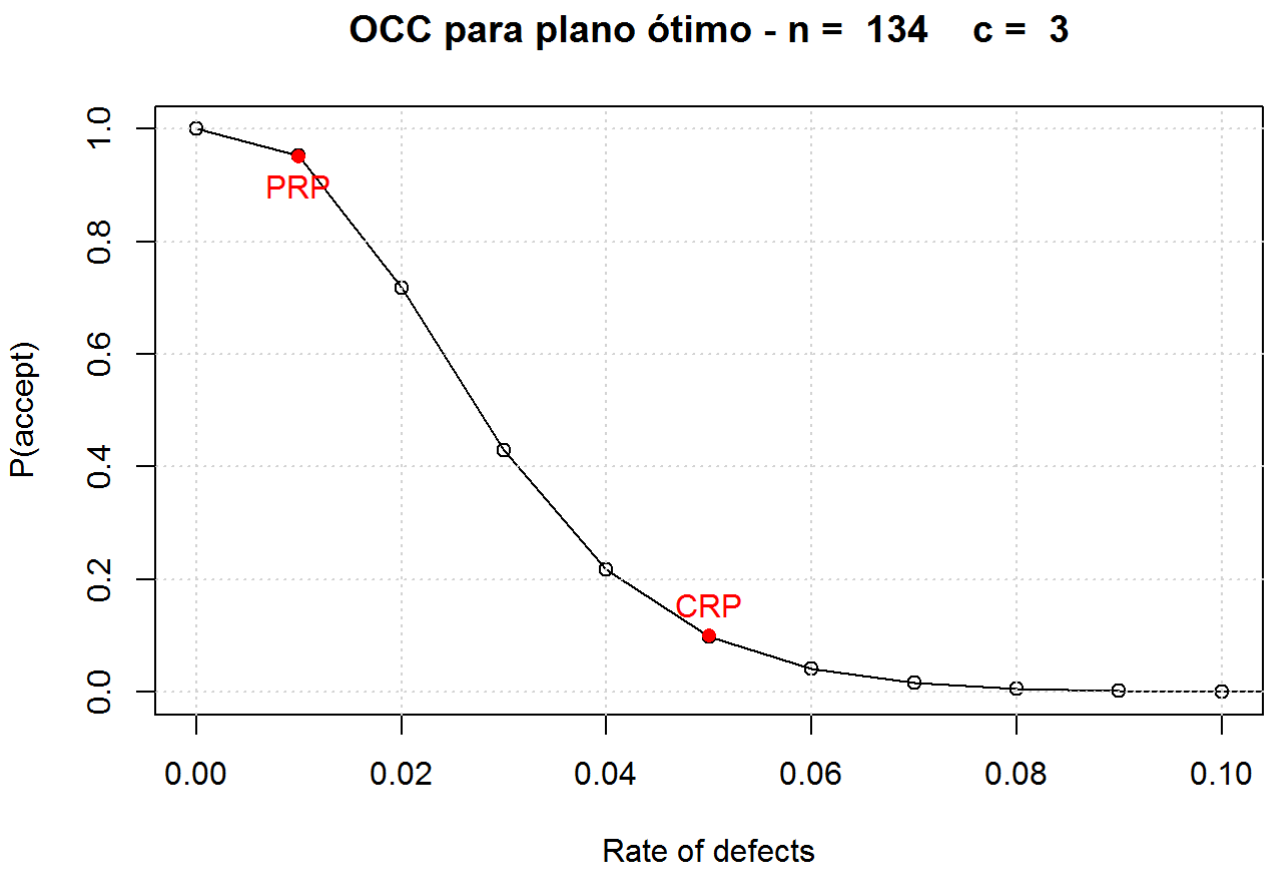
```
# Varendo em n
n <- 130
c <- 2

p <- seq(0,0.1,0.001)
lambda <- p*n

Pa <- ppois(c, lambda)
plot(p,Pa, type = 'l', ylim = c(0,1.0),
     main = paste('Curva Característica de Operação   -  c = ',c),
     sub = 'Variando o tamanho da amostra - n')
grid()
points(c(p0,p1),c(1-alpha,beta), pch = 16, col = 'red')

for (i in 1:5) {
  Pa <- ppois(c, p*(50+20*i))
  lines(p,Pa, col=i)
}
legend("topright", legend = (50+20*(1:5)), pch = 15, col = (1:5), title = "n")
```



```
# Varendo em c
n <- 130
c <- 2

p <- seq(0,0.1,0.001)
lambda <- p*n

Pa <- ppois(c, lambda)
plot(p,Pa, type = 'l', ylim = c(0,1.0),
     main = paste('Curva Característica de Operação   -  n =',n),
     sub = 'Variando o número de aceitação - c')
grid()
points(c(p0,p1),c(1-alpha,beta), pch = 16, col = 'red')

for (i in 0:5) {
  Pa <- ppois(i, p*n)
  lines(p,Pa, col=i+1)
}
legend("topright", legend = 0:5, pch = 15, col = (0:5)+1, title = "c")
```



```
# Plano Ótimo
library(AcceptanceSampling)
parametrosOtimos <- find.plan(PRP = c(p0,1-alpha), CRP = c(p1,beta), type = 'poisson')
planoOtimo <- OC2c(parametrosOtimos$n,parametrosOtimos$c, parametrosOtimos$r, type = 'poisso
n')
plot(planoOtimo, xlim = c(0,0.10),
     main = paste('OCC para plano ótimo - n = ',parametrosOtimos$n,'   c = ', parametrosOtimo
s$c))
grid()
points(c(p0,p1),c(1-alpha,beta), pch = 16, col = 'red')
text(c(p0,p1),c(1-alpha,beta),pos=c(1,3),c('PRP','CRP'), col = 'red')
```



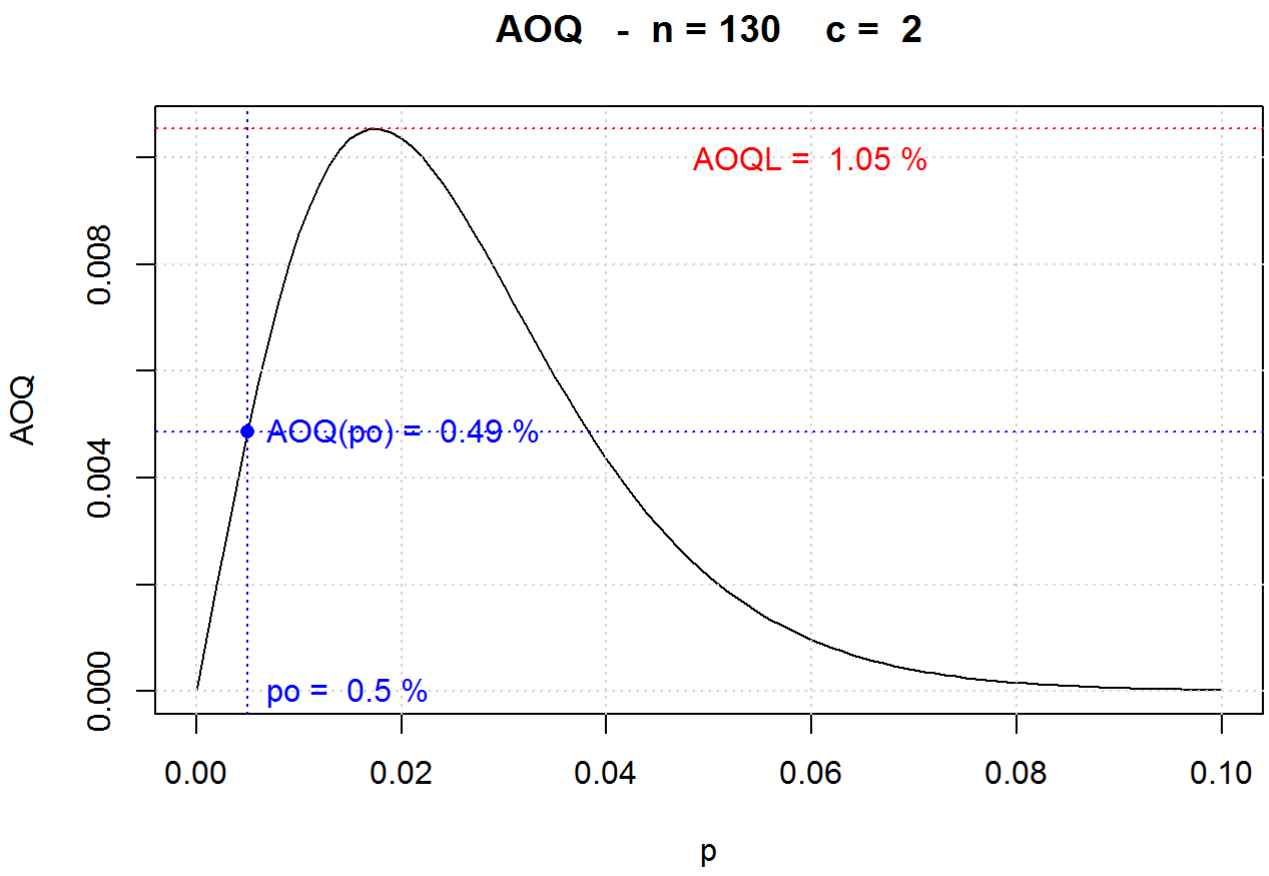

```
assess(planoOtimo, PRP = c(p0,1-alpha), CRP = c(p1,beta))
```

```
## Acceptance Sampling Plan (poisson)
##
##                Sample 1
## Sample size(s)      134
## Acc. Number(s)        3
## Rej. Number(s)        4
##
## Plan CAN meet desired risk point(s):
##
##            Quality   RP P(accept) Plan P(accept)
## PRP           0.01           0.95     0.95280856
## CRP           0.05           0.10     0.09880797
```

```
# Qualidade Média Resultante - AOQ
n <- 130
c <- 2
po <- 0.005

p <- seq(0,0.1,0.001)
lambda <- p*n
Pa <- ppois(c, lambda)
AOQ <- p*Pa

plot(p,AOQ, type = 'l',
     main = paste('AOQ   -  n =',n, '   c = ',c))
grid()
abline(v=po, col = 'blue', lty = 3)
(AOQo <- po*ppois(c, po*n))
```

```
## [1] 0.004858289
```

```
abline(h=AOQo, col = 'blue', lty = 3)
points(po,AOQo, col = 'blue', pch = 16)
text(po,0,pos=4, paste('po = ',round(po*100,2),'%'), col = 'blue')
text(po,AOQo, pos=4, paste('AOQ(po) = ',round(AOQo*100,2),'%'), col='blue')
AOQL <- max(AOQ)
abline(h=AOQL, col = 'red', lty = 3)
text(0.06,AOQL,pos=1, paste('AOQL = ', round(AOQL*100,2),'%'), col = 'red')
```




```
# Fim do arquivo
```