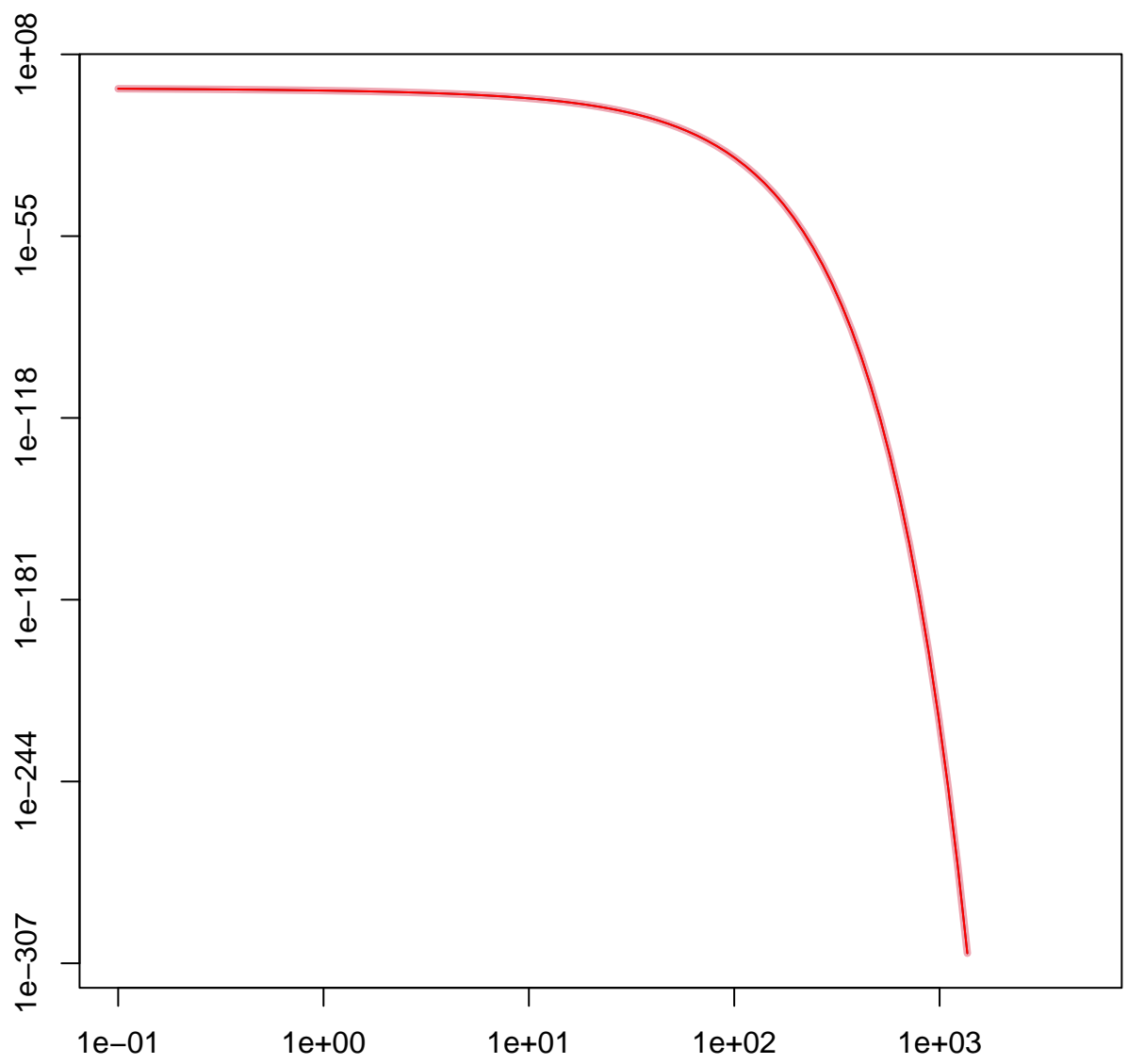
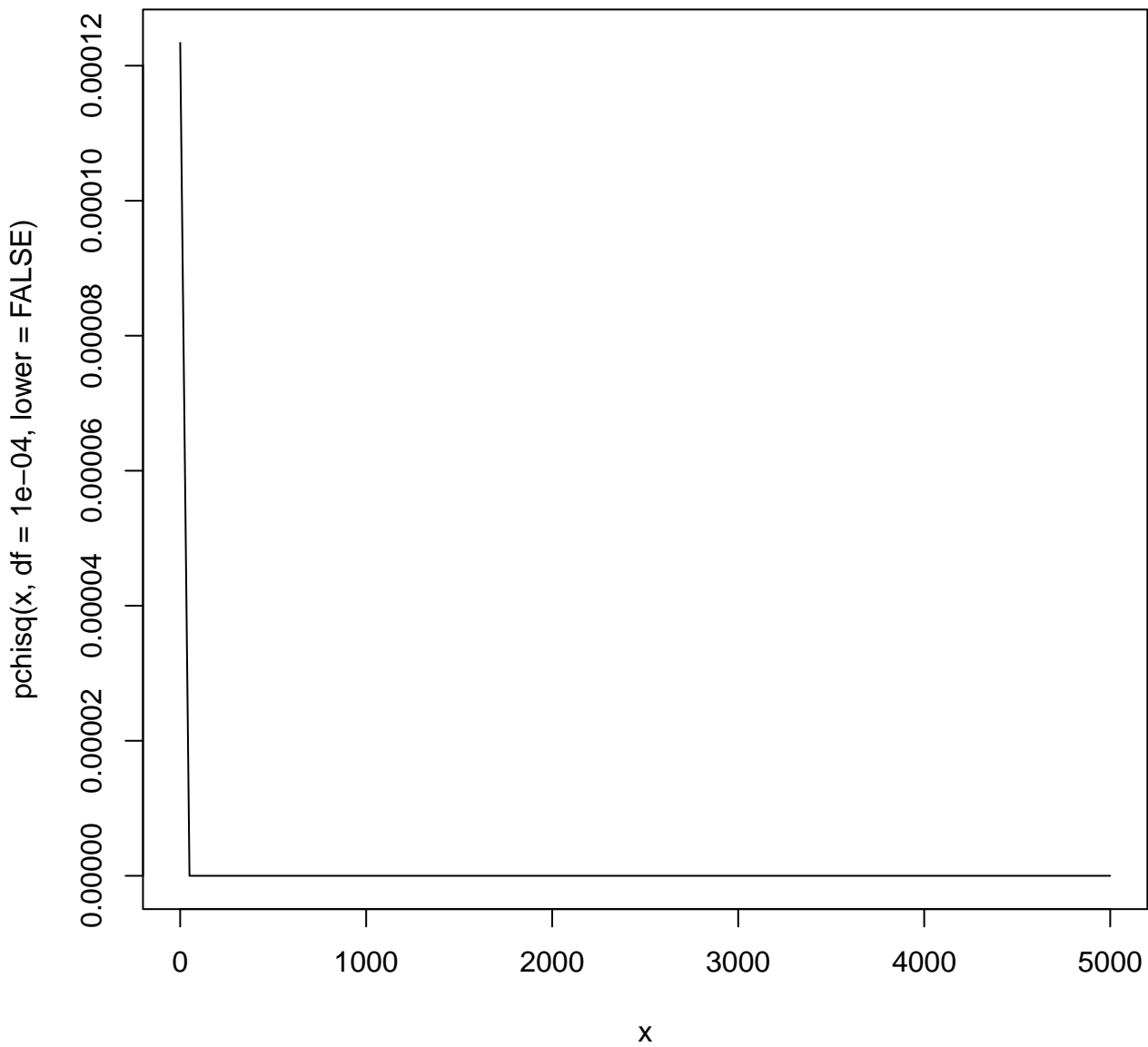
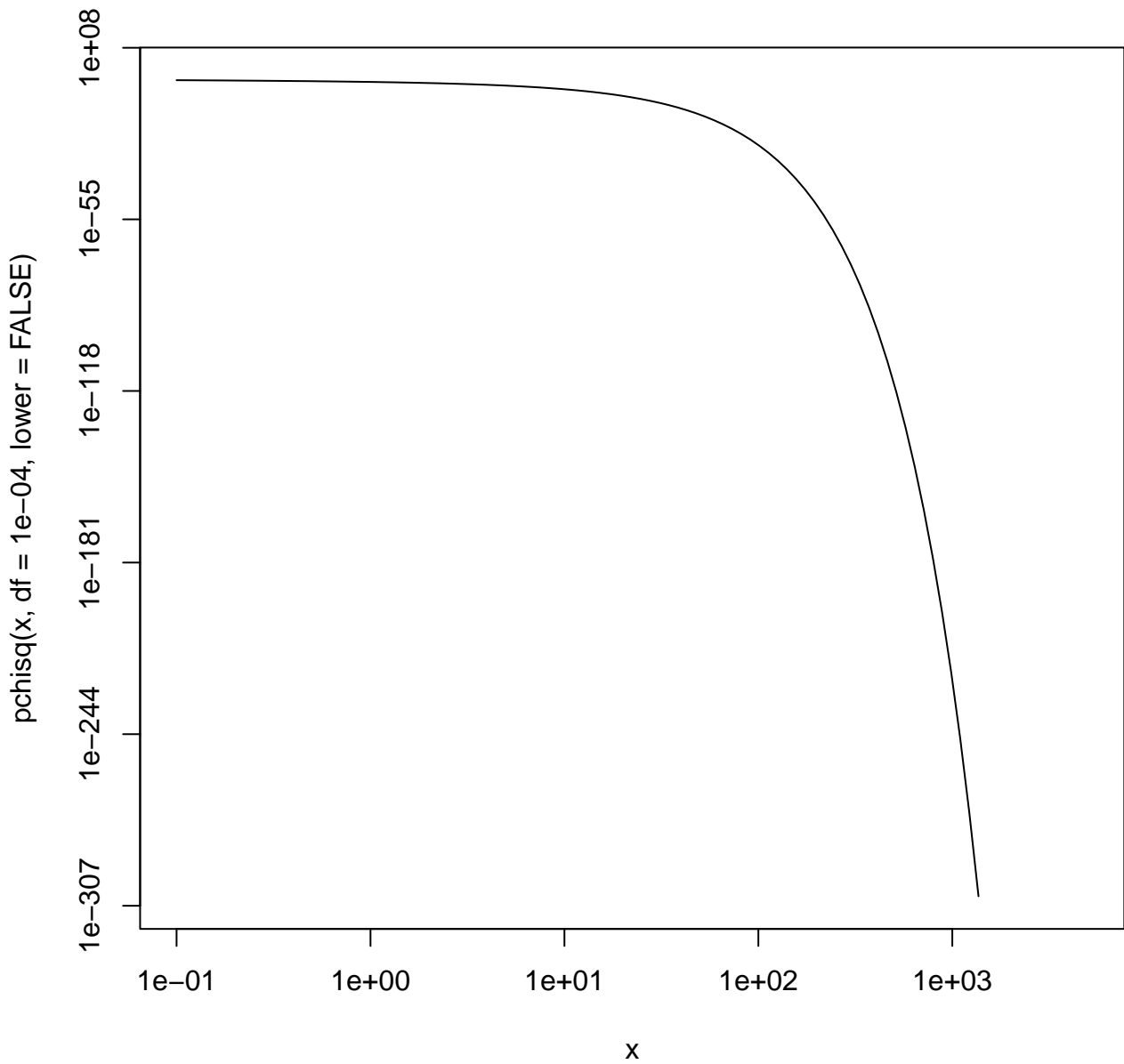


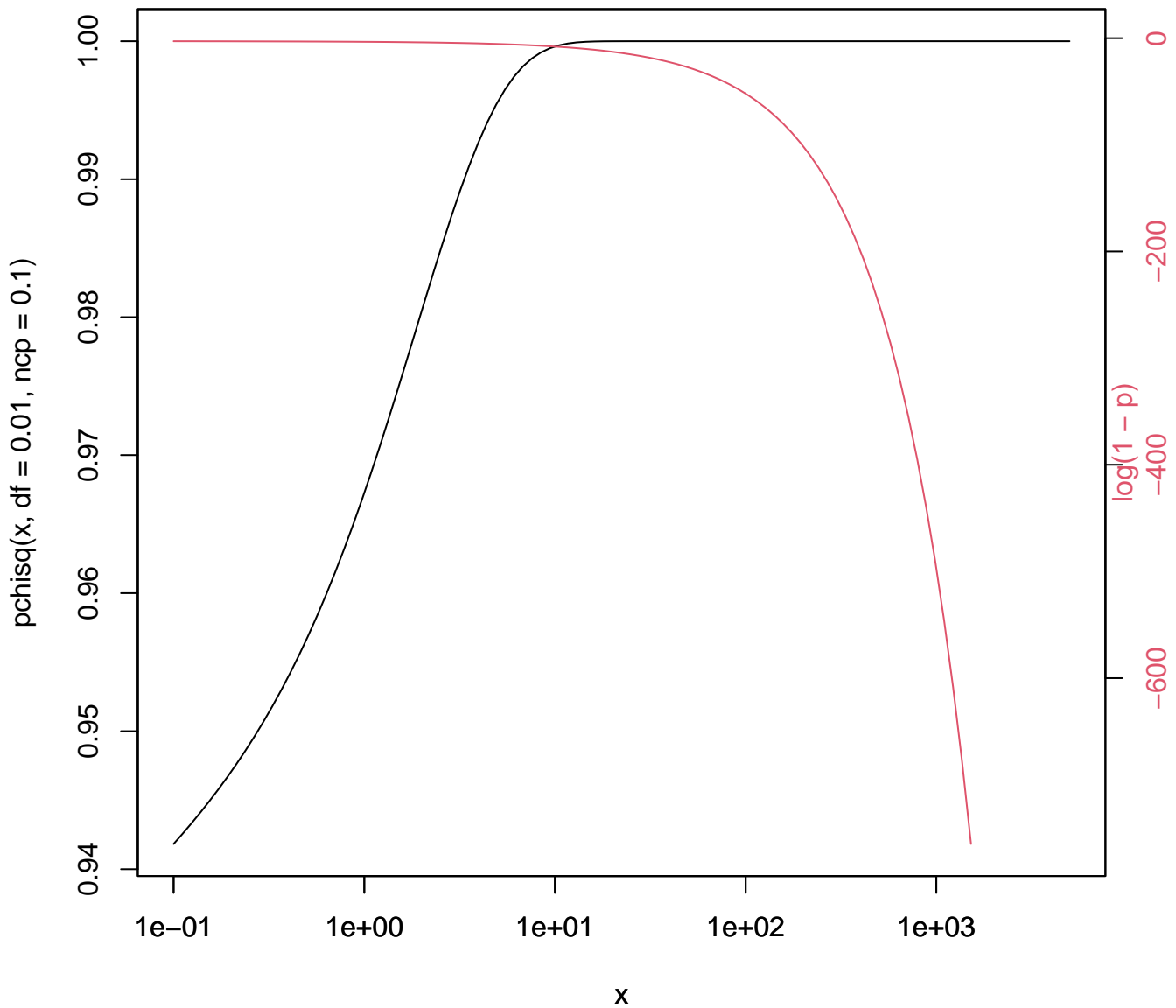
function(x) pchisq(x, df = 1e-04, ncp = 0, lower = FALSE)



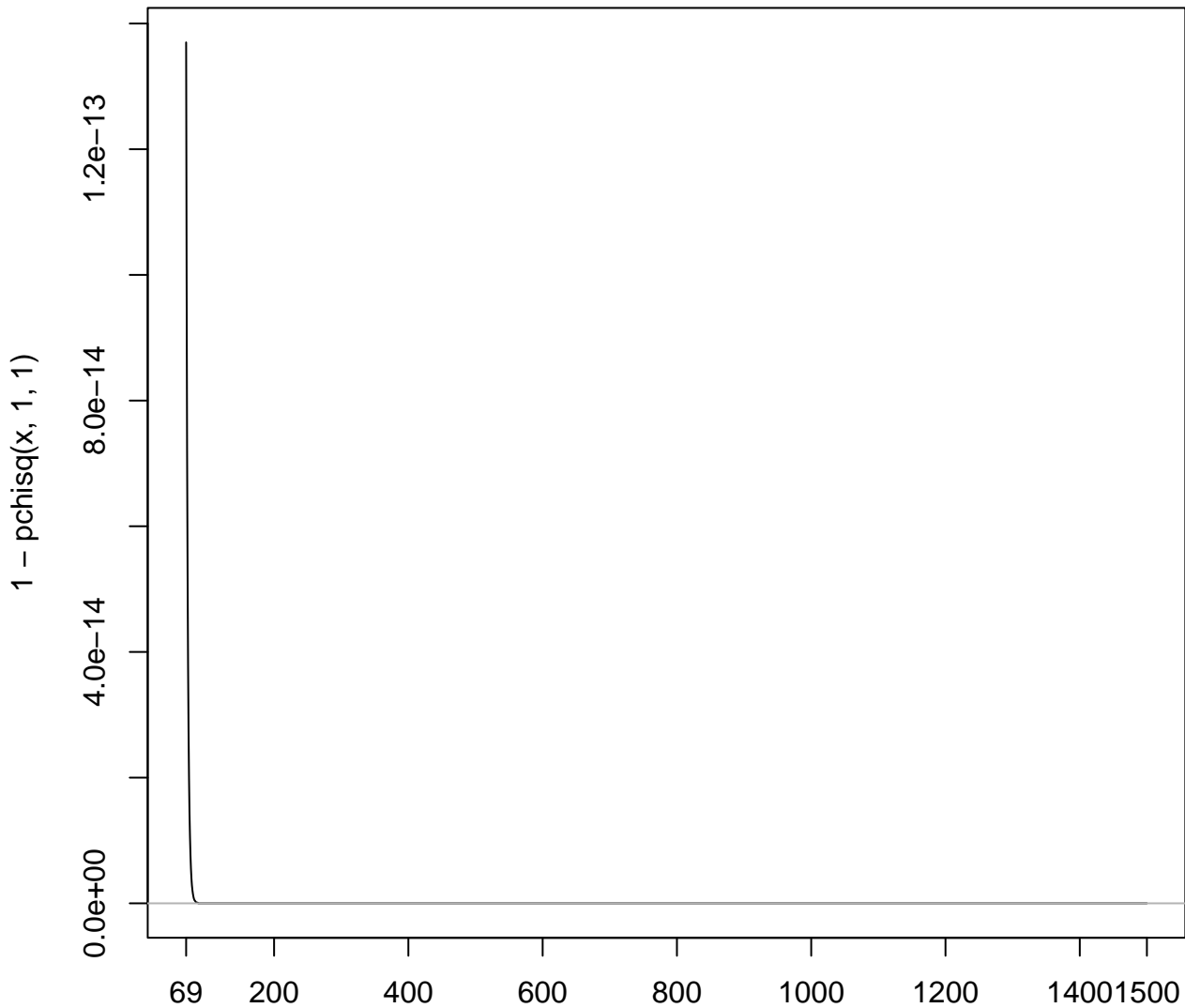
x



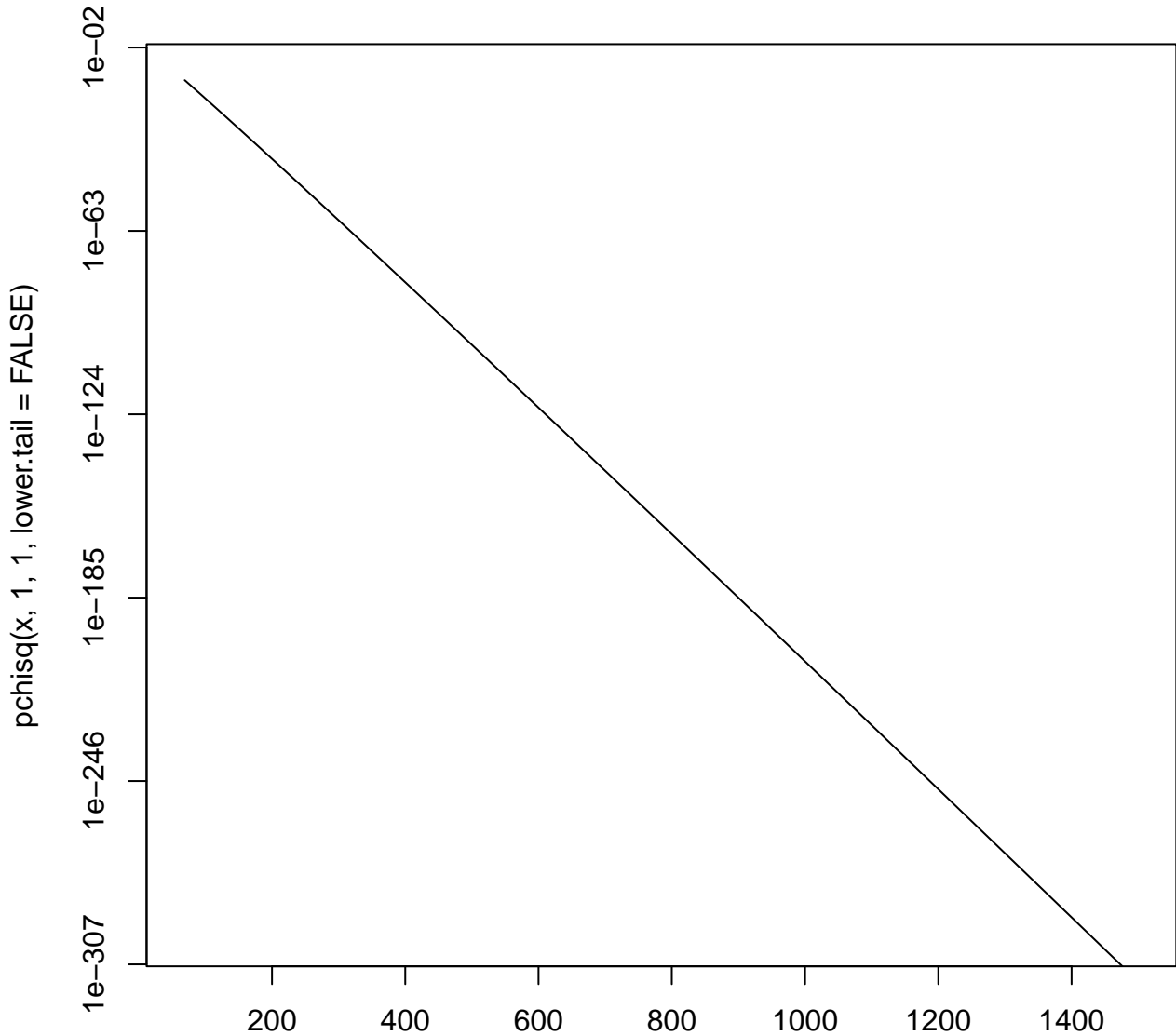




$1 - \text{pchisq}(x, 1, 1)$, x in [69, 1500]

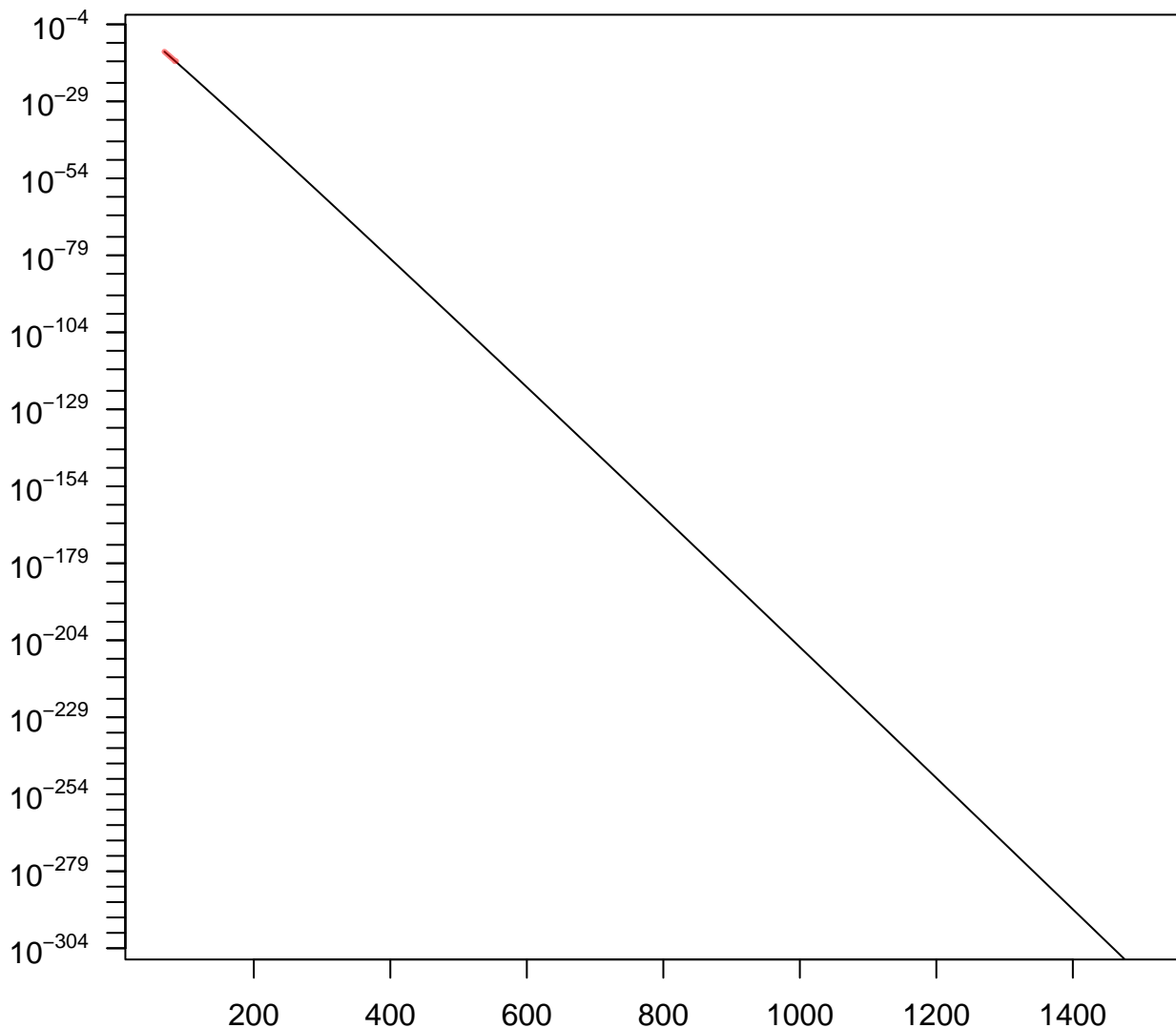


$1 - \text{pchisq}(x, 1, 1)$, x in $[69, 1500]$



x

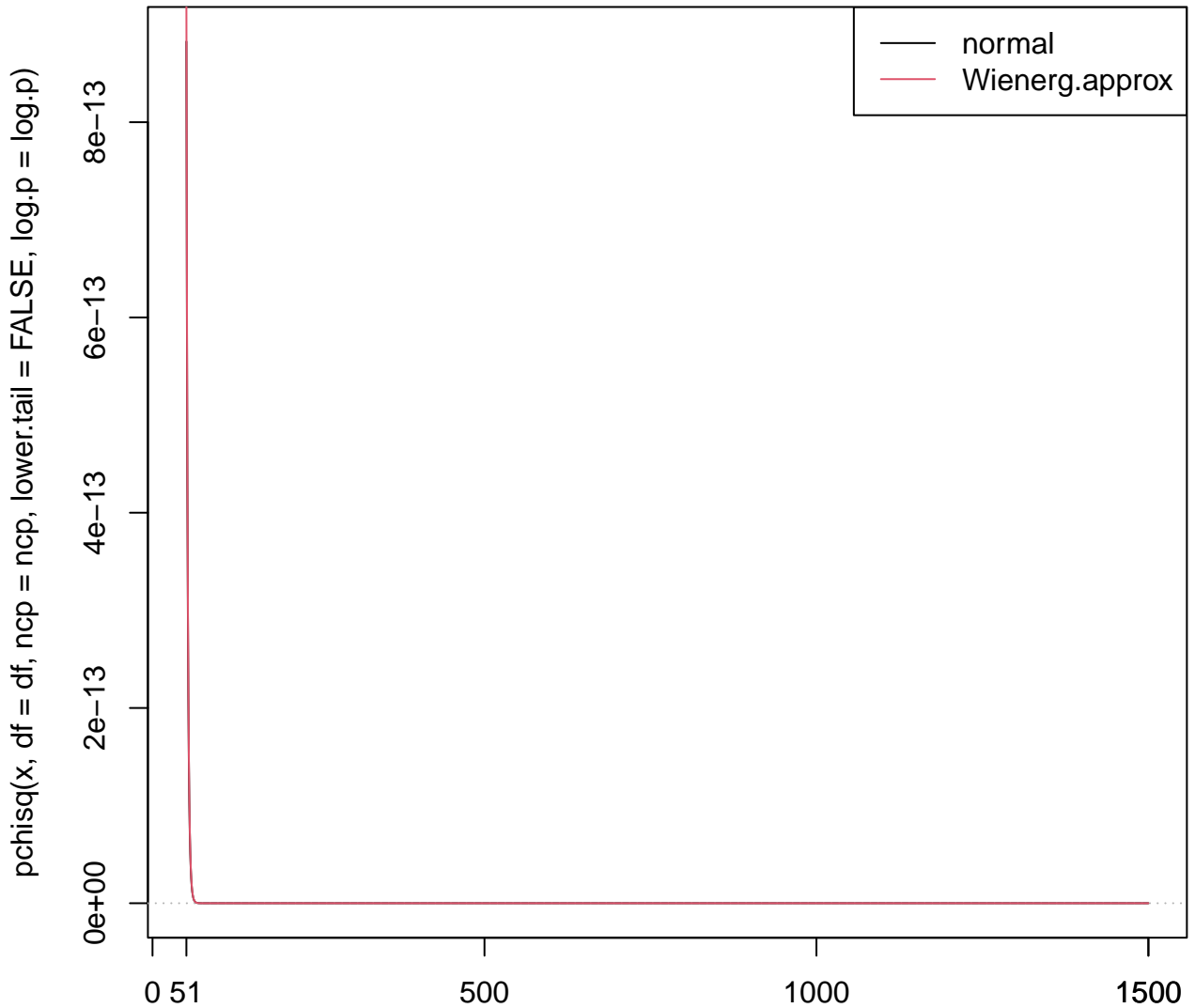
1-pchisq(x,1,1), x in [69, 1500]



pc1\$x

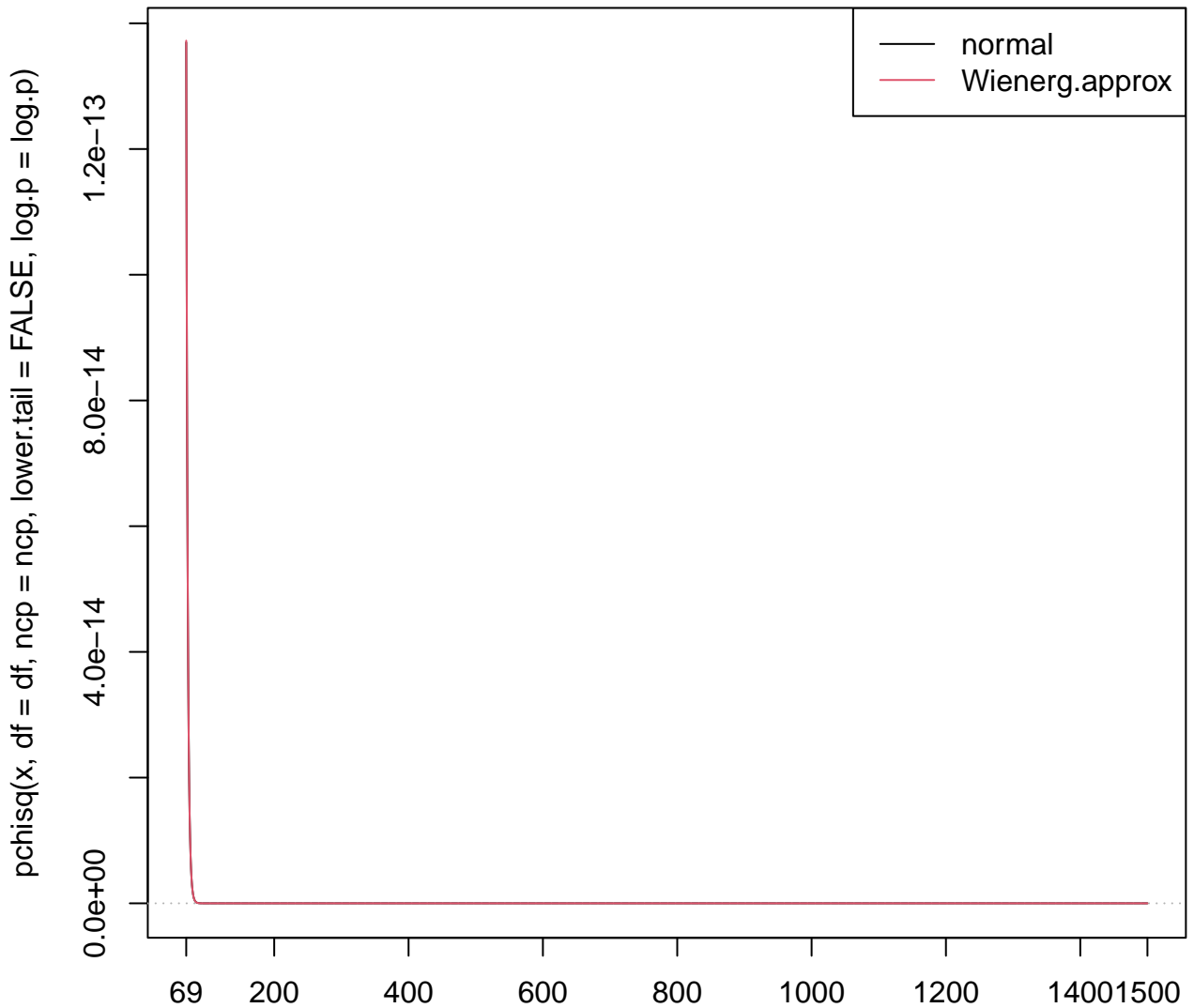
R Under development (unstable) (2023-11-30 r85651 ucrt)

pchisq(x, 0.1, 0.1, lower=F), x in [51, 1500]



x

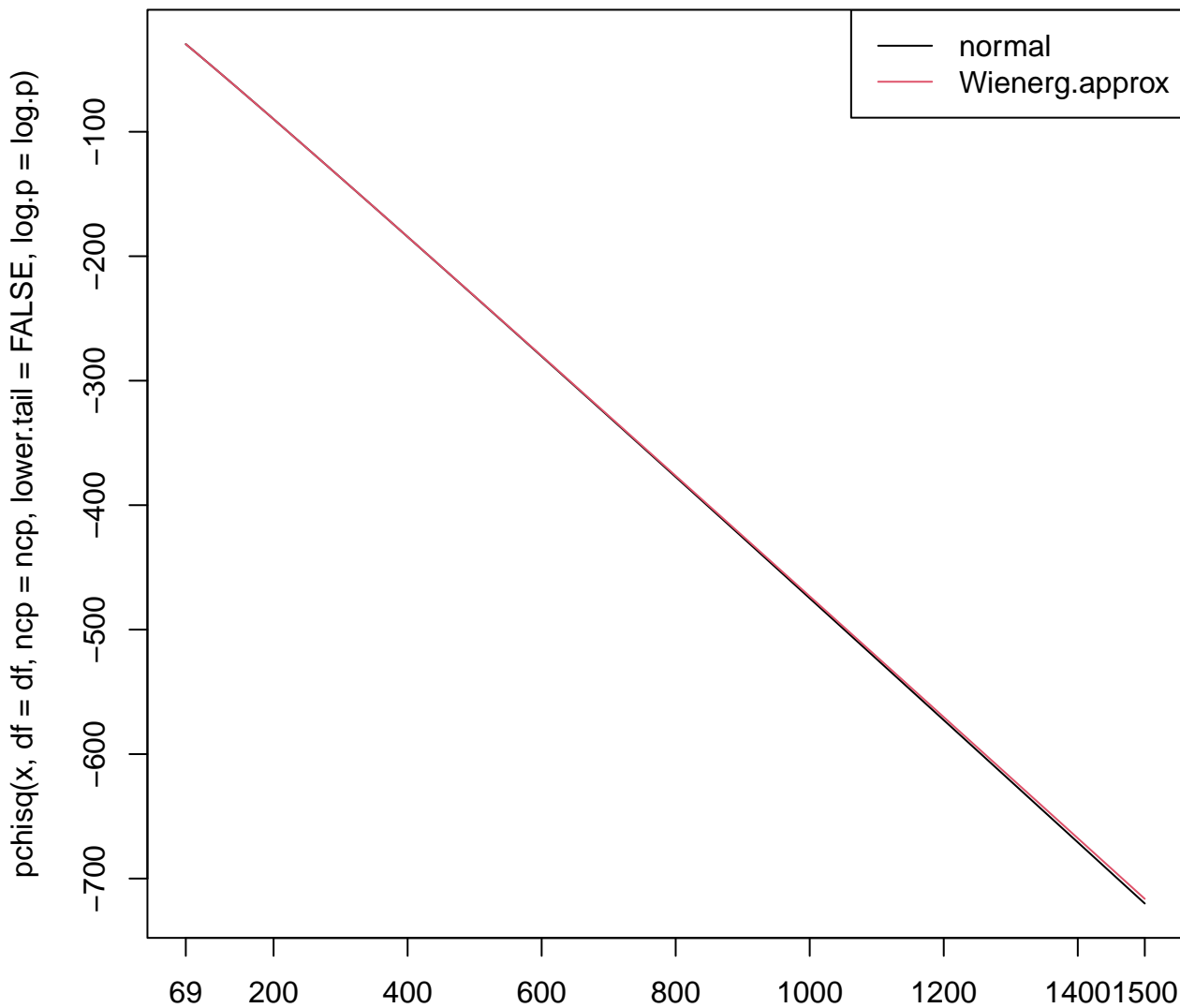
pchisq(x, 1, 1, lower=F), x in [69, 1500]



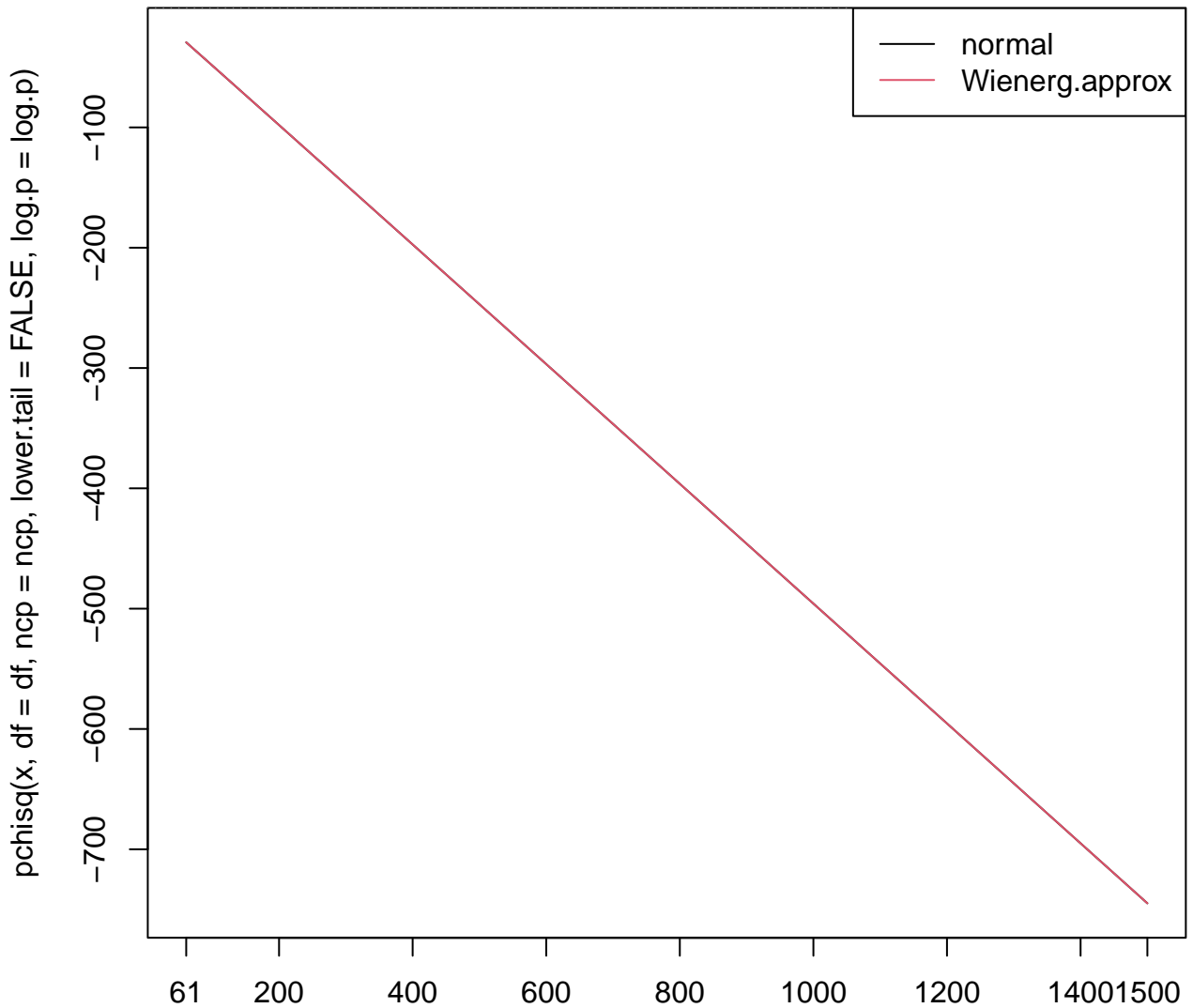
x

R Under development (unstable) (2023-11-30 r85651 ucrt)

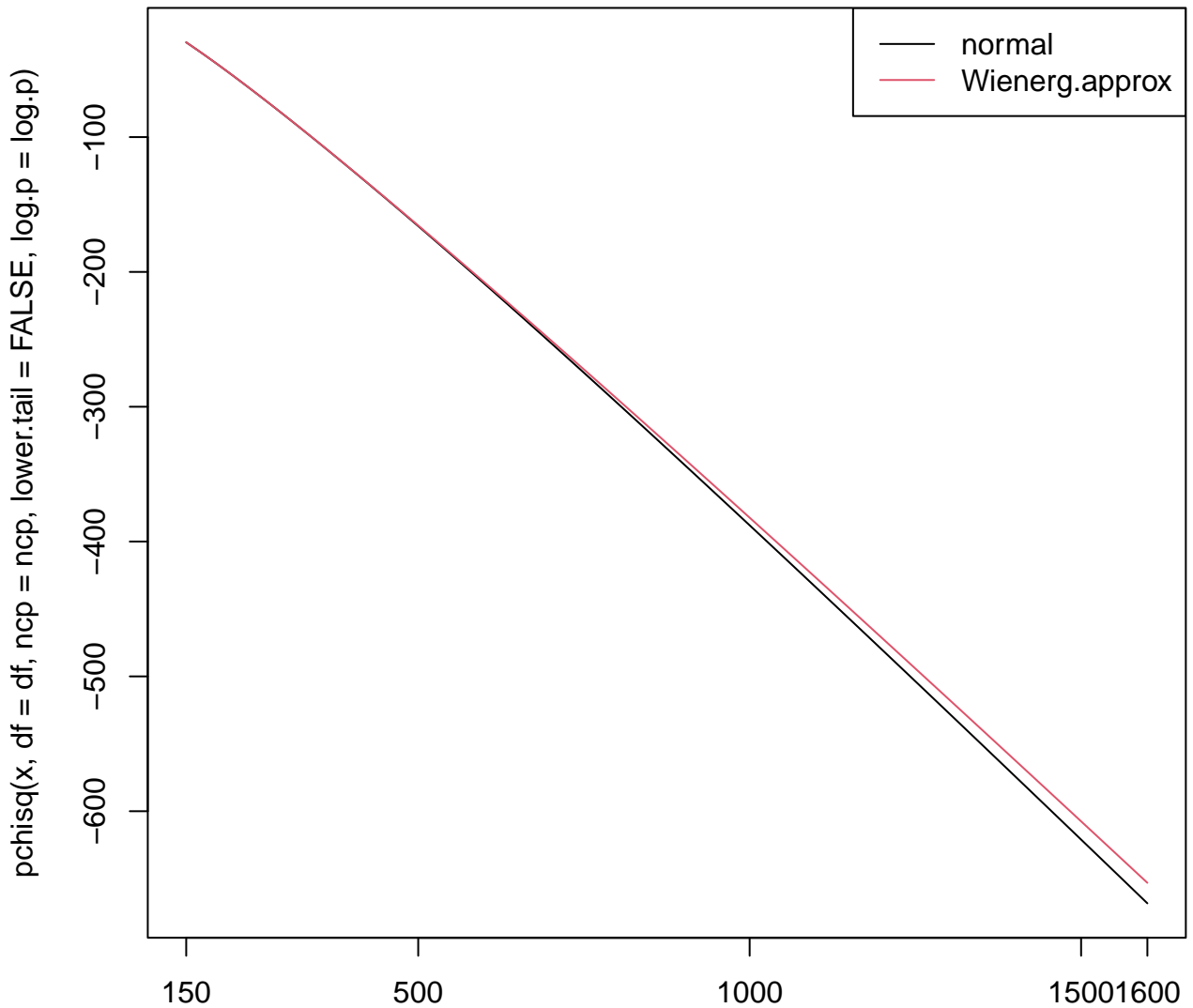
pchisq(x, 1, 1, lower=F, log=T), x in [69, 1500]



pchisq(x, 2.5, 0.02, lower=F, log=T), x in [61, 1500]



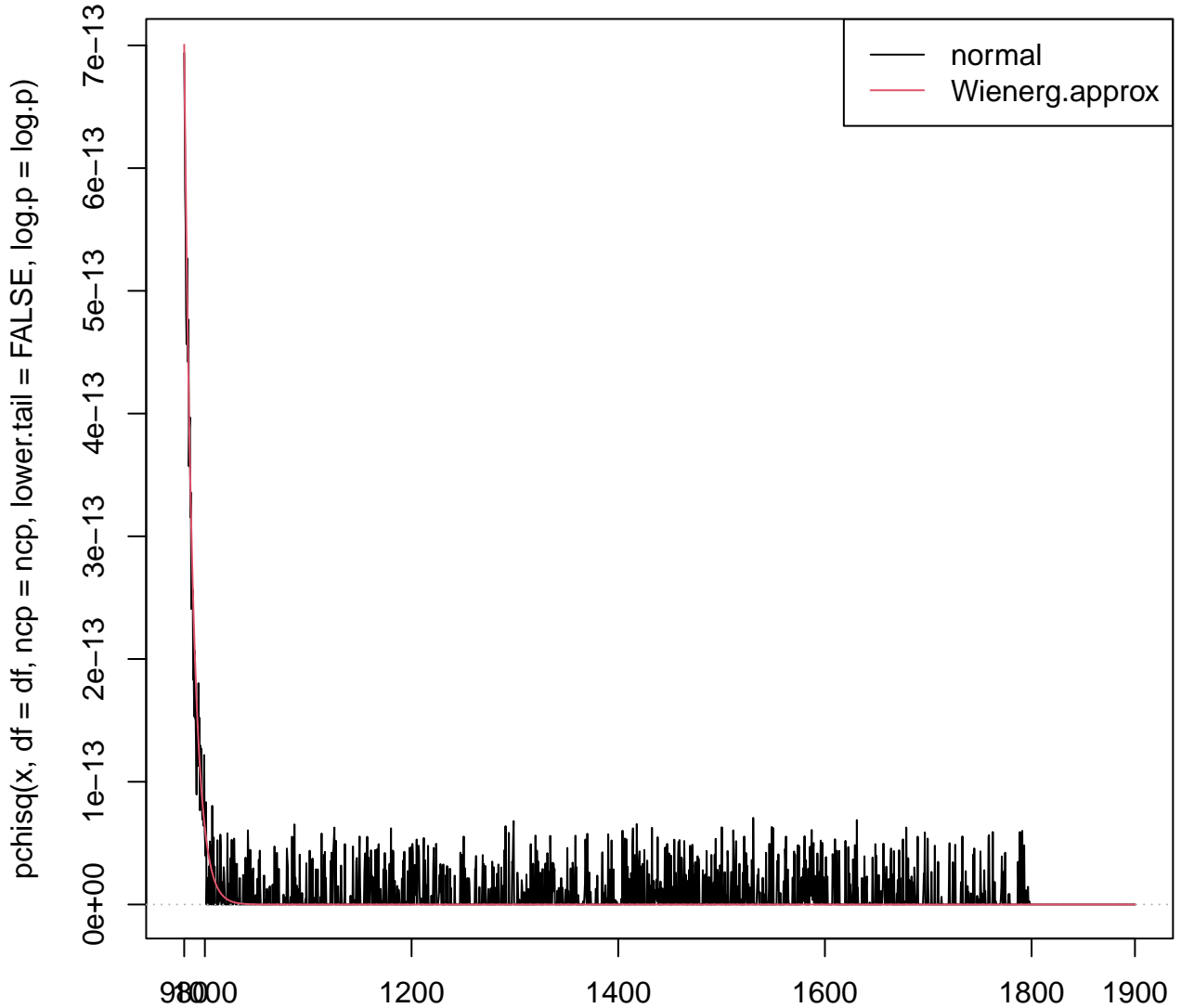
pchisq(x, 25, 10, lower=F, log=T), x in [150, 1600]



x

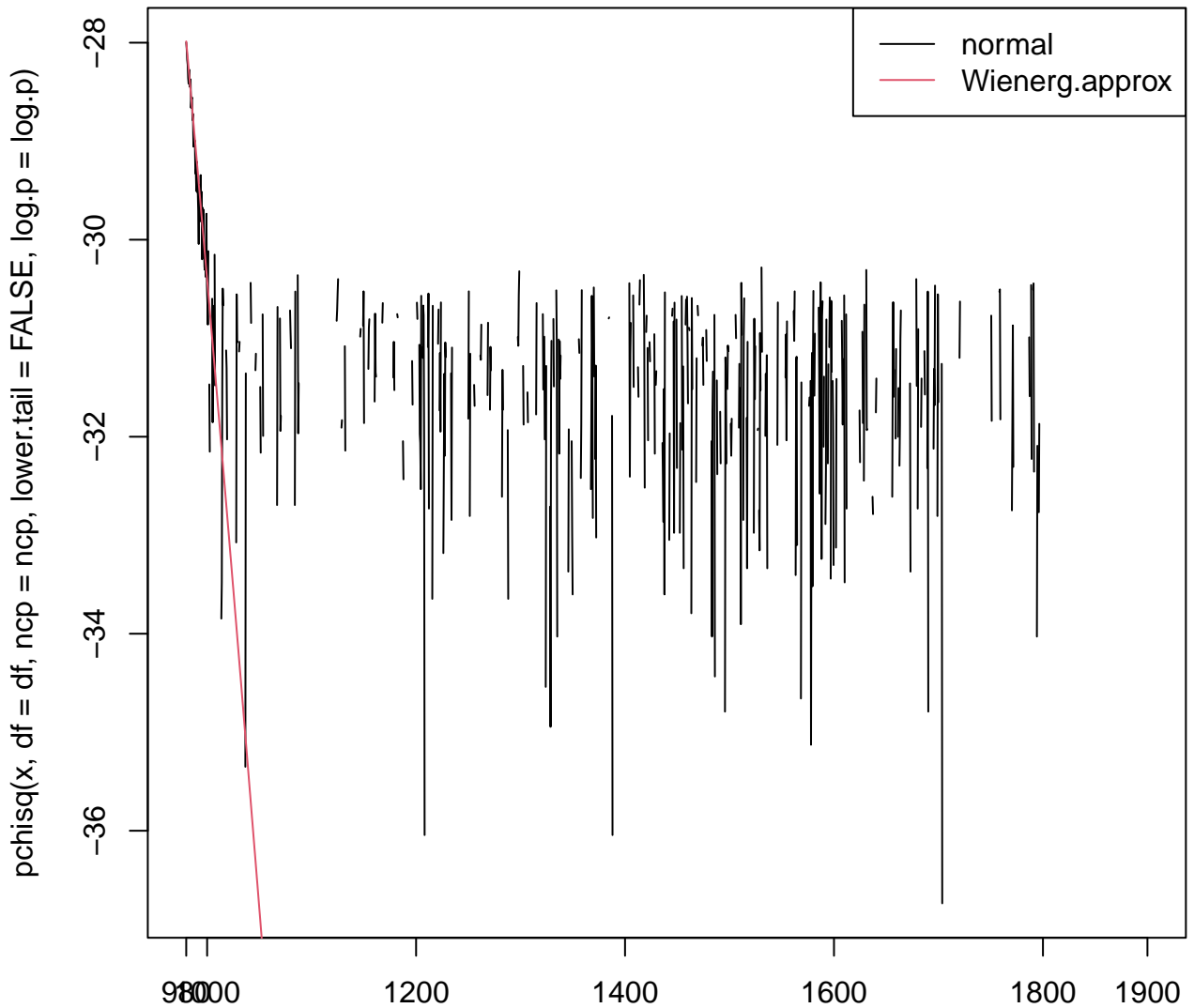
R Under development (unstable) (2023-11-30 r85651 ucrt)

pchisq(x, 100, 500, lower=F), x in [980, 1900]

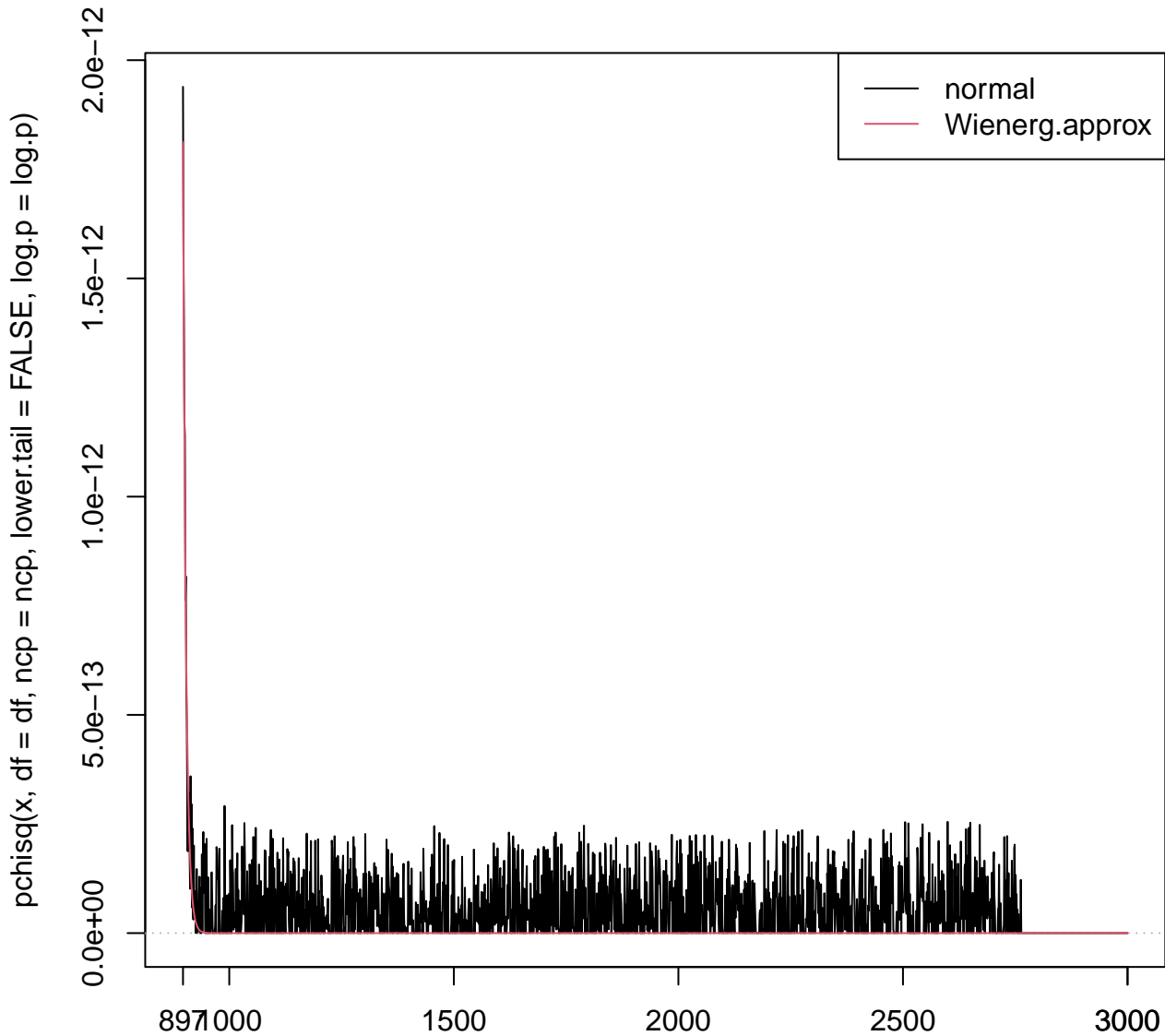


x

pchisq(x, 100, 500, lower=F, log=T), x in [980, 1900]

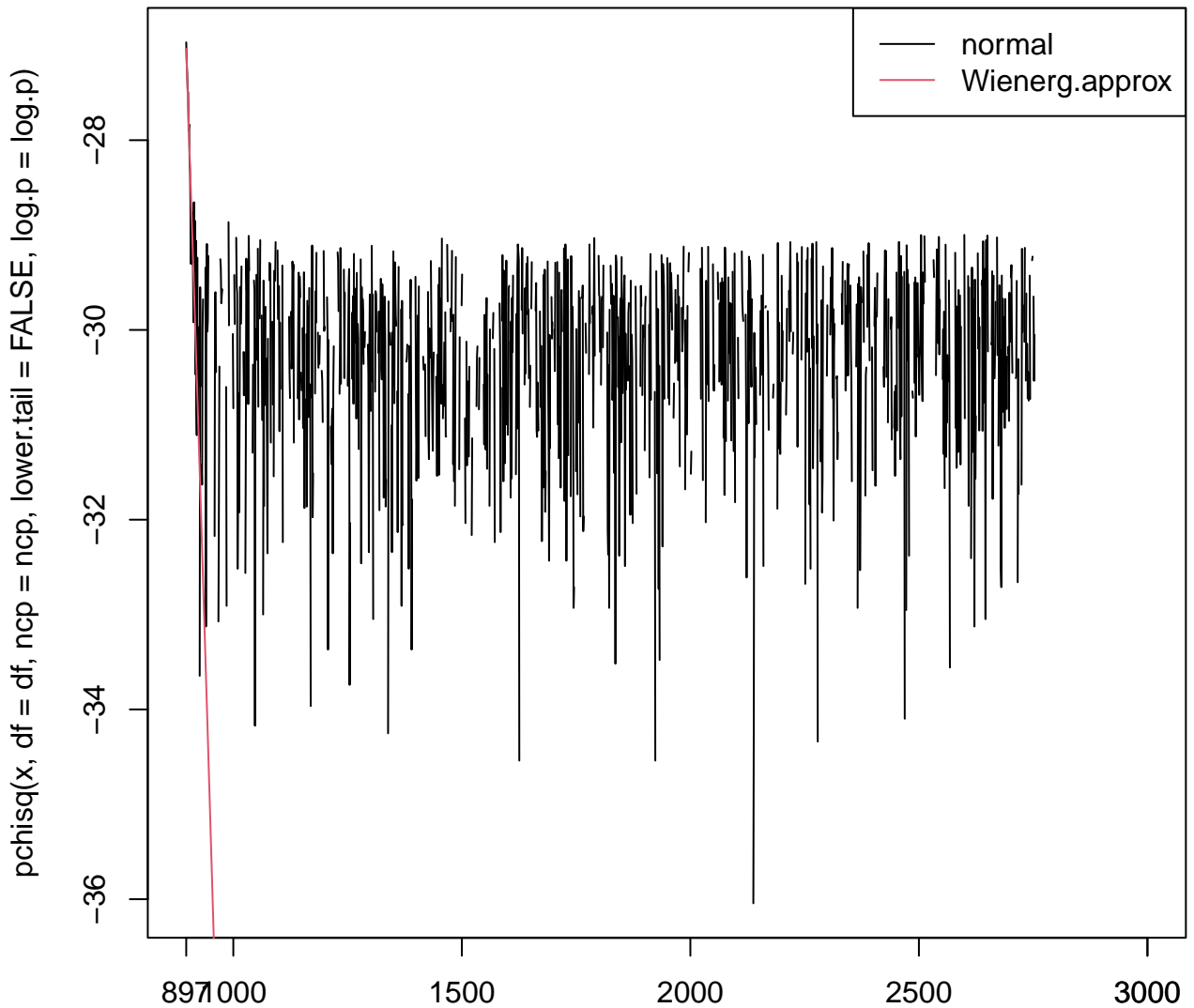


pchisq(x, 500, 100, lower=F), x in [897, 3000]

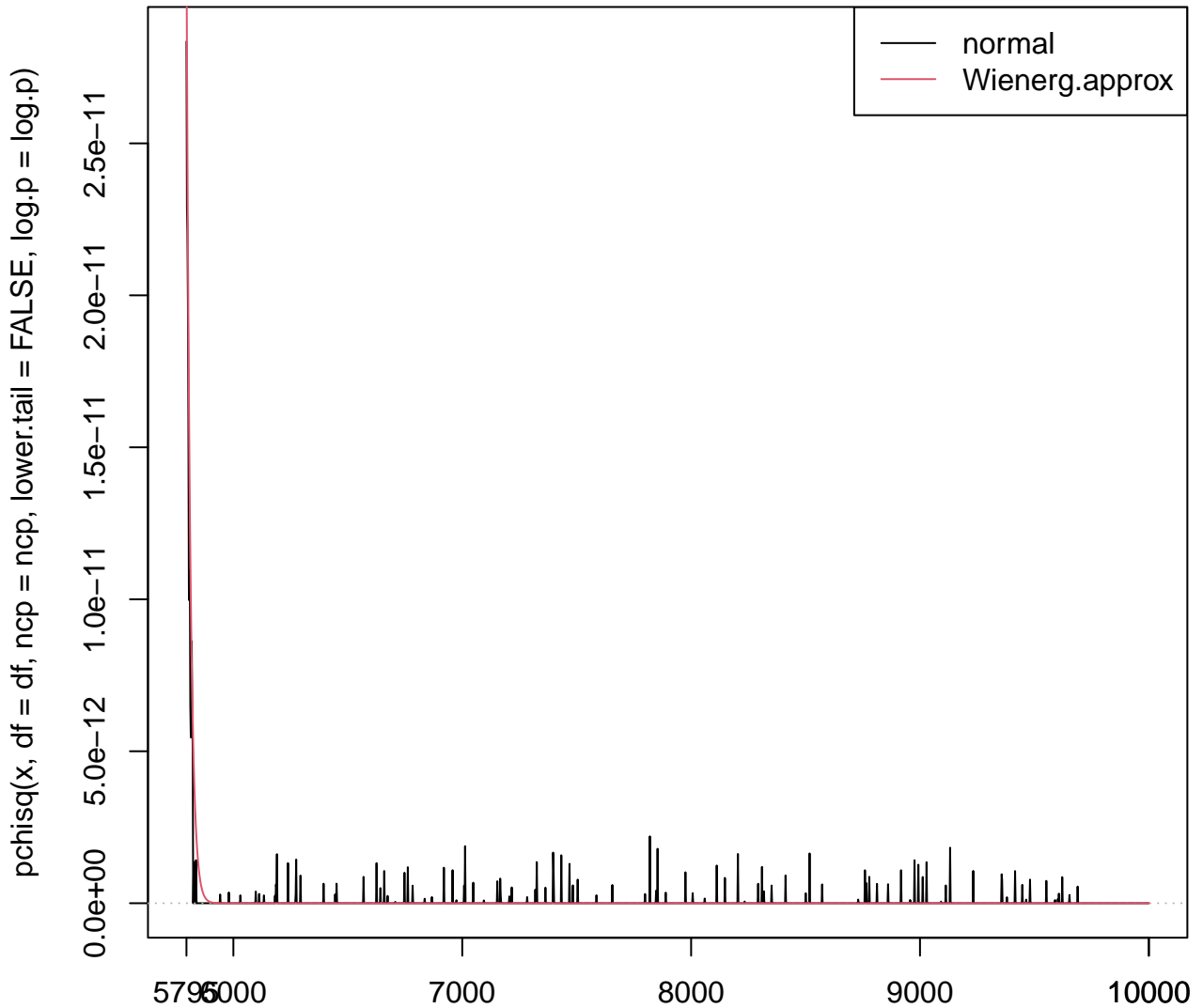


x

pchisq(x, 500, 100, lower=F, log=T), x in [897, 3000]



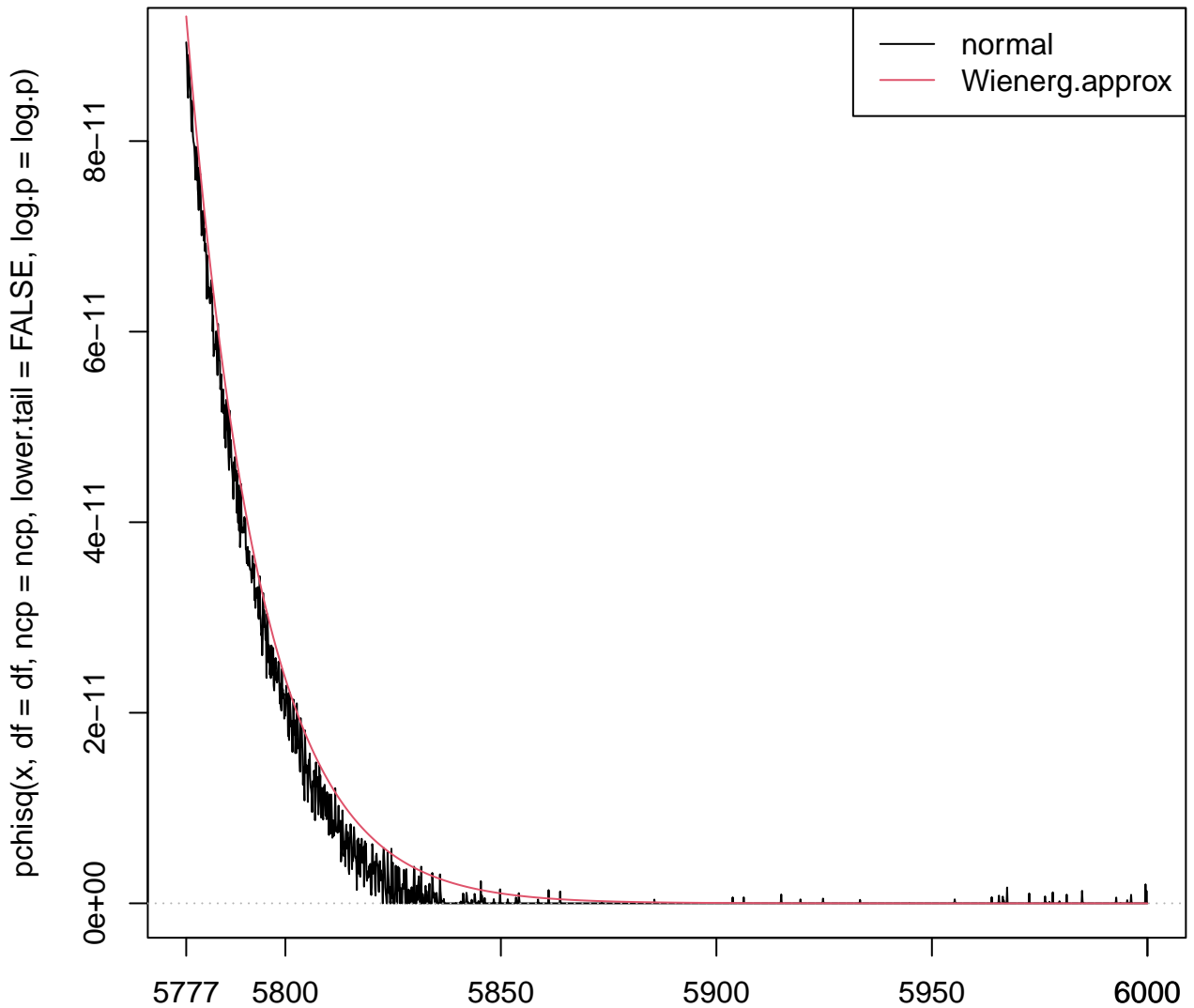
pchisq(x, 5000, 100, lower=F), x in [5795, 1e+04]



x

R Under development (unstable) (2023-11-30 r85651 ucrt)

pchisq(x, 5000, 100, lower=F), x in [5777, 6000]

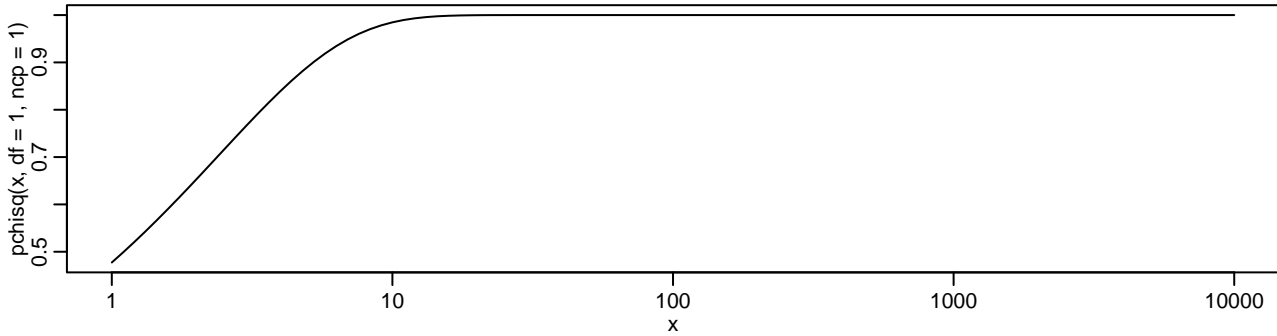


x

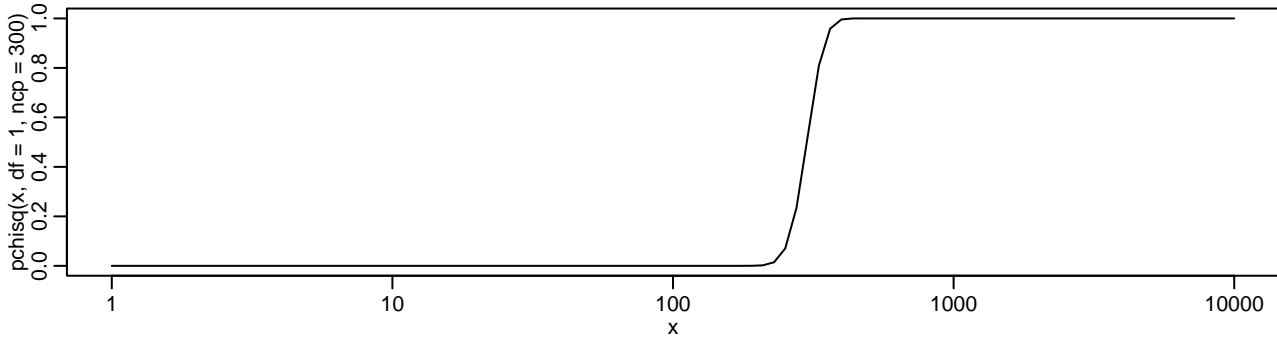
R Under development (unstable) (2023-11-30 r85651 ucrt)

pchisq(x >= 1497, *, ncp=) BUG (no longer!)

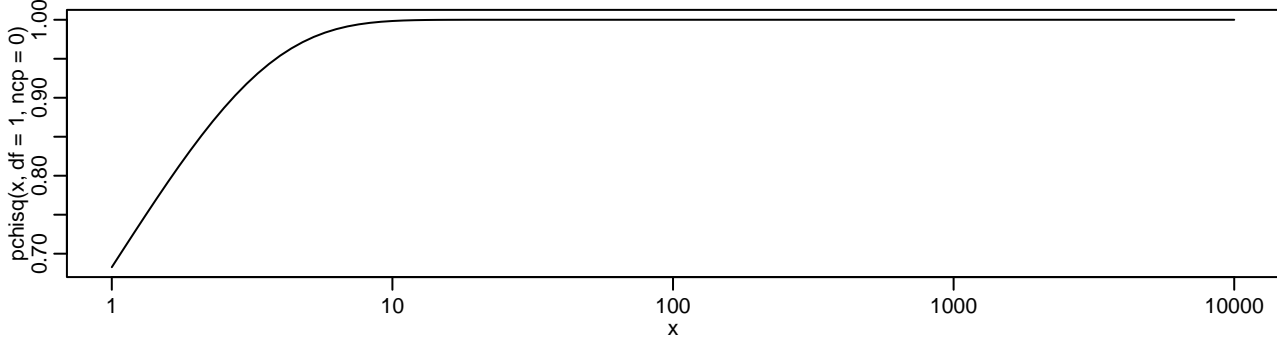
ncp = 1



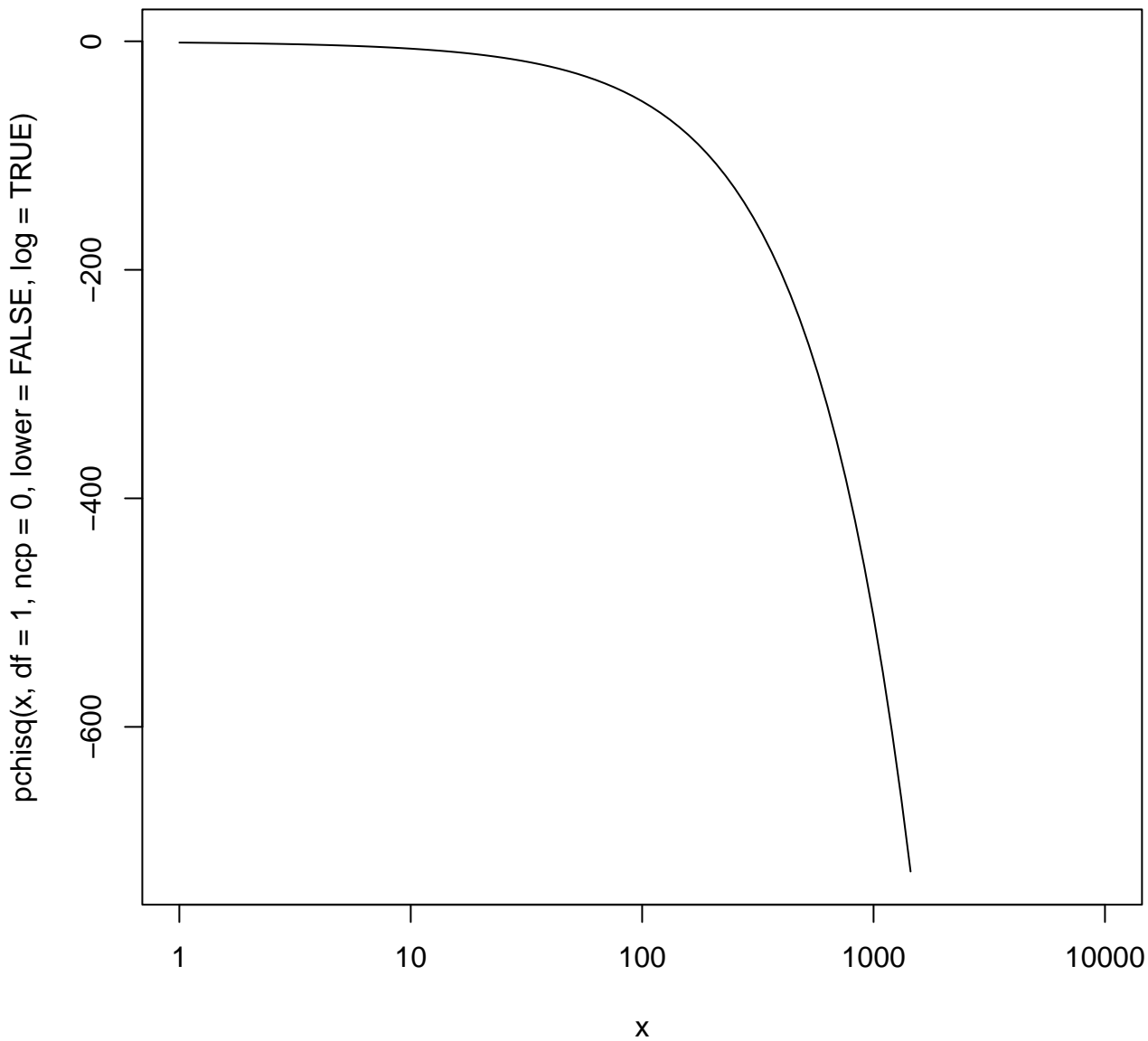
ncp = 300



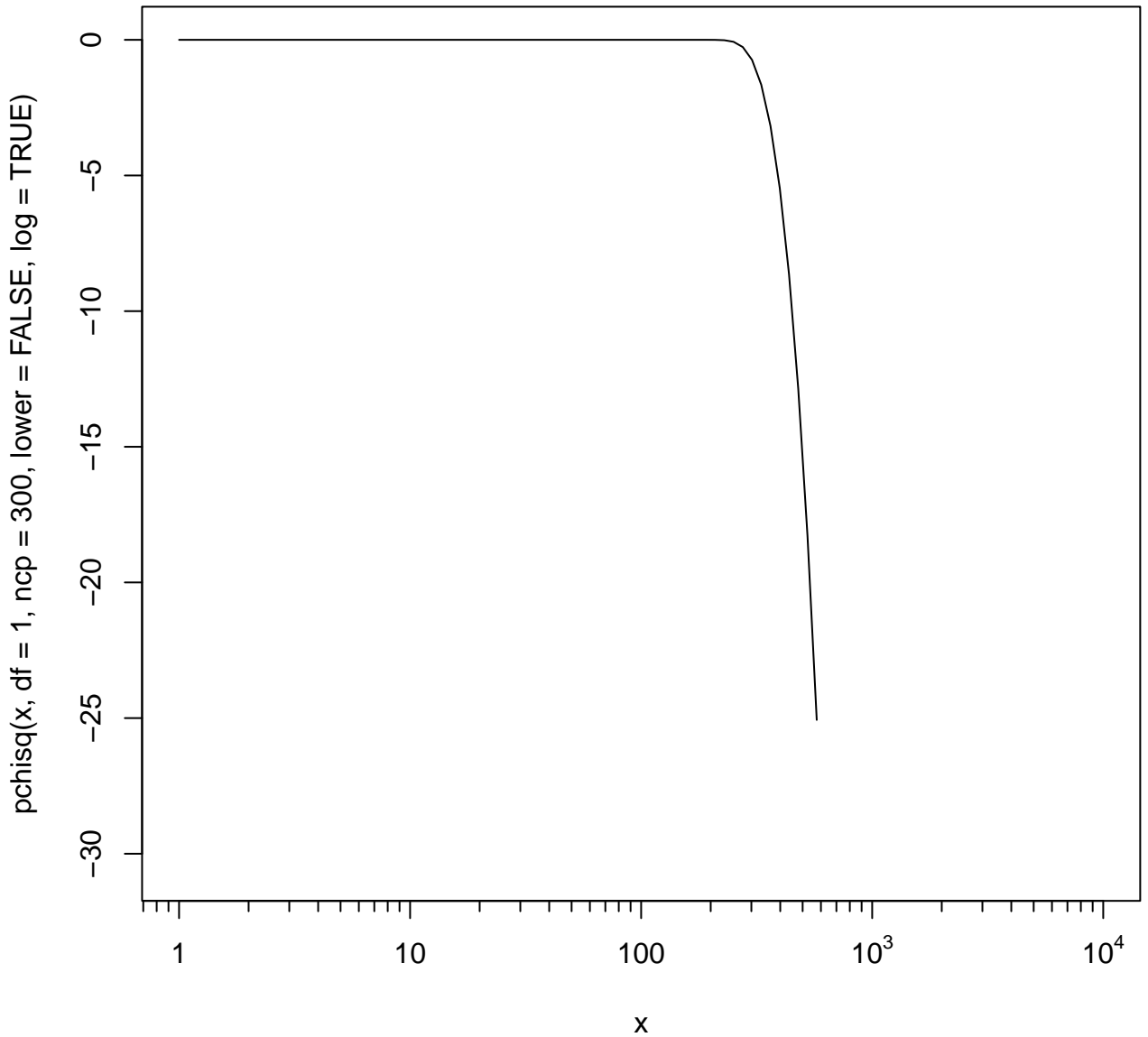
ncp = 0



ncp = 0

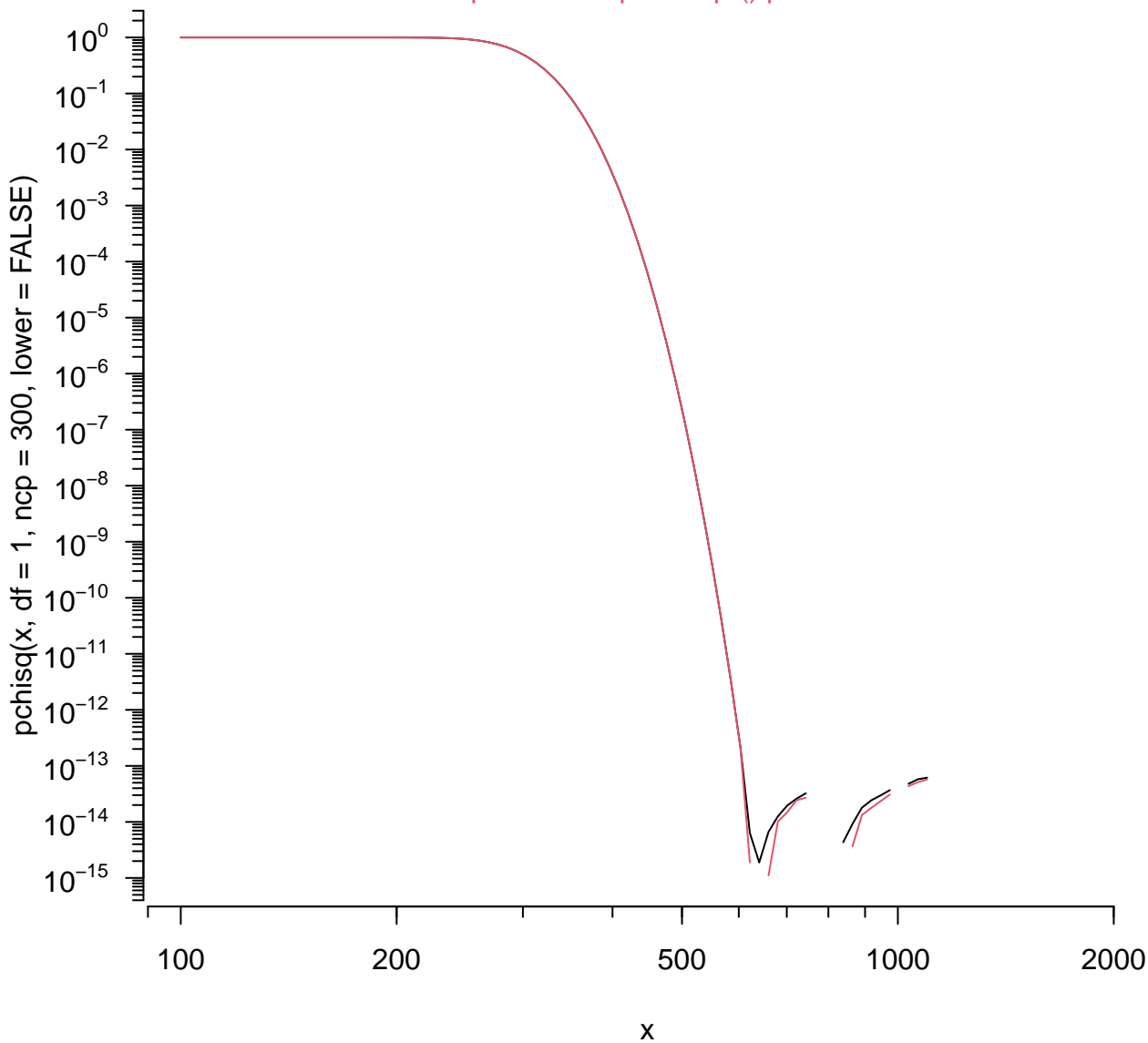


ncp = 300, log=TRUE

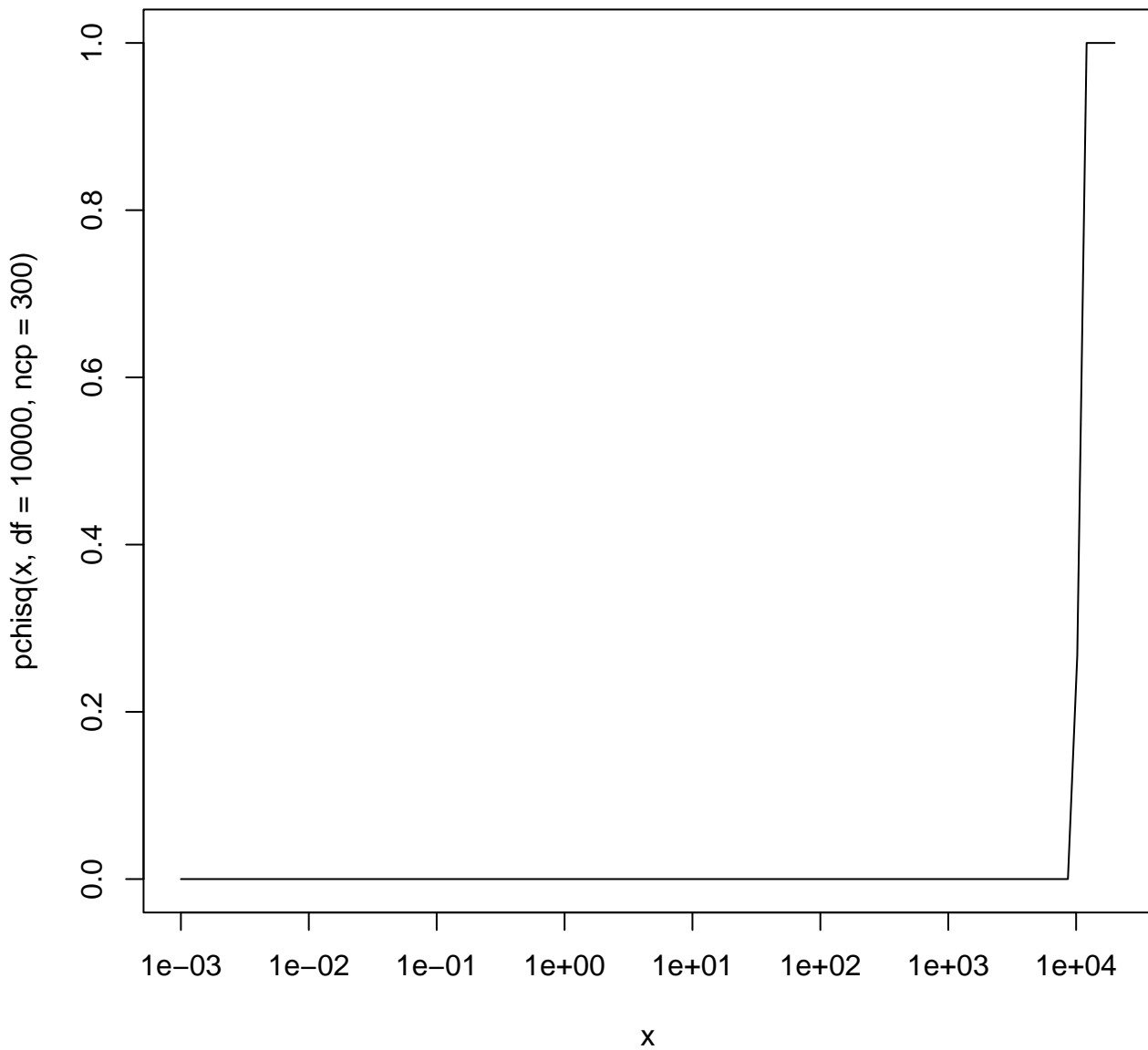


ncp = 300, upper tail

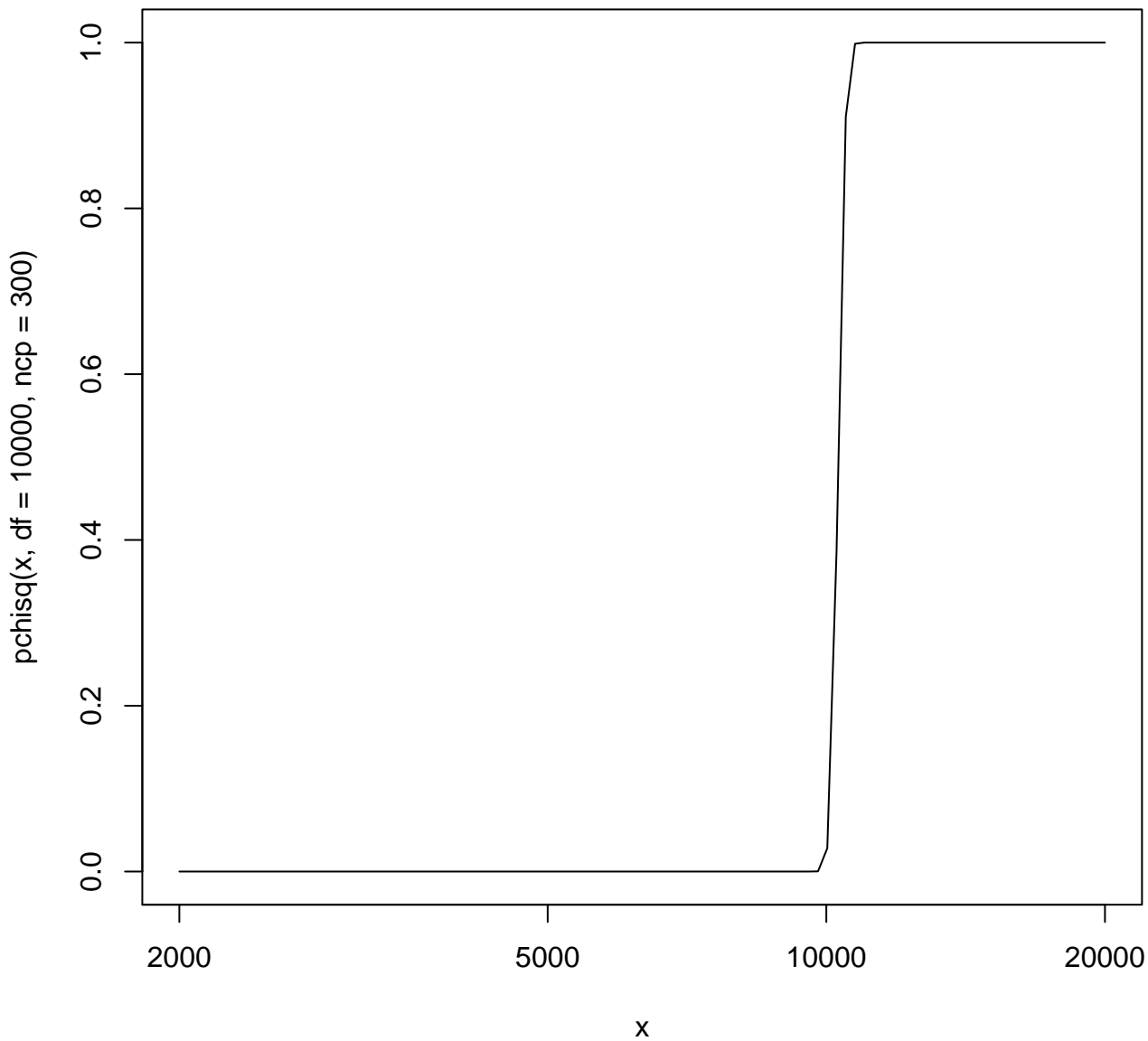
ncp = 300 --- pchisqV() pure R



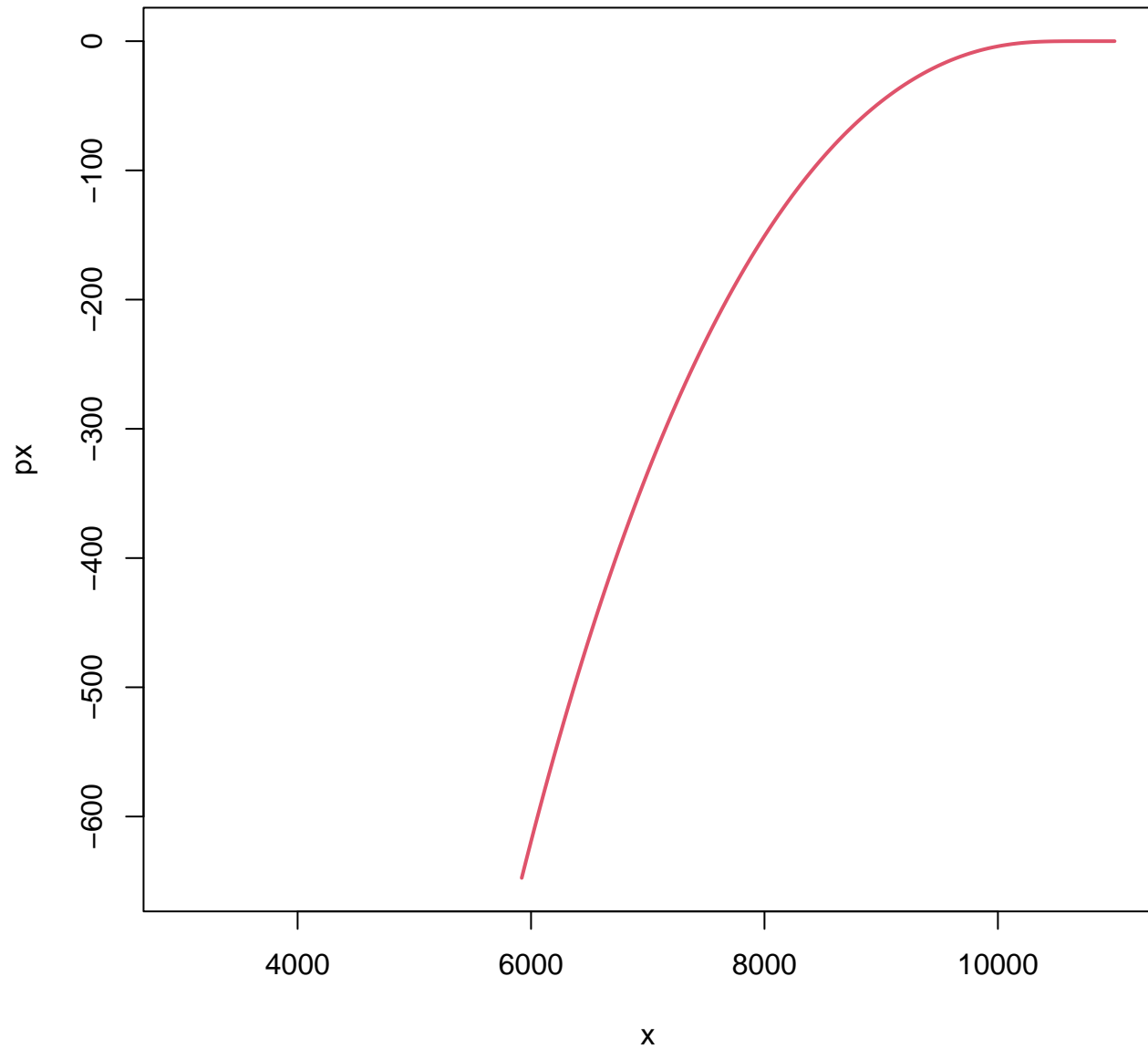
ncp = 300



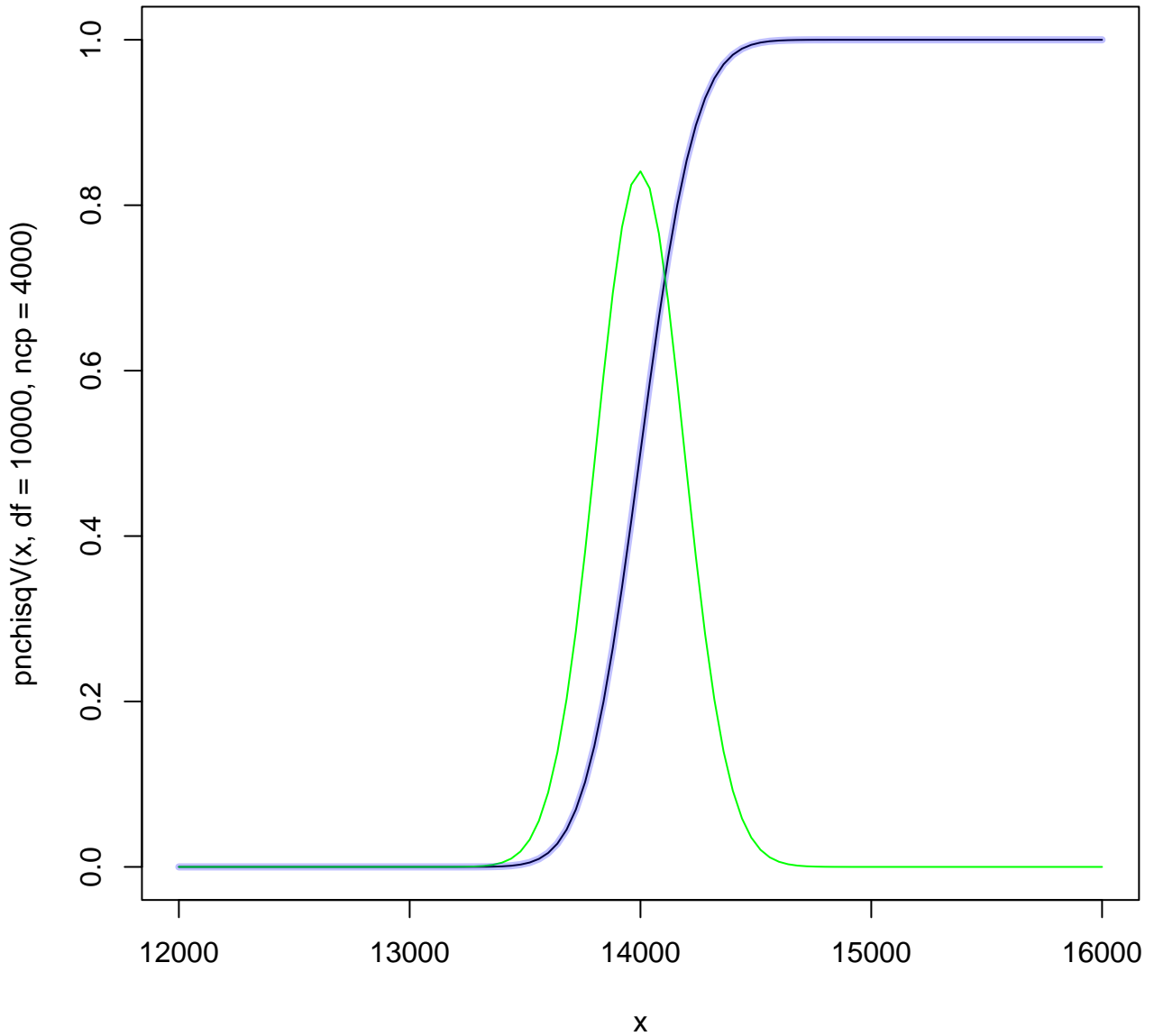
ncp = 300



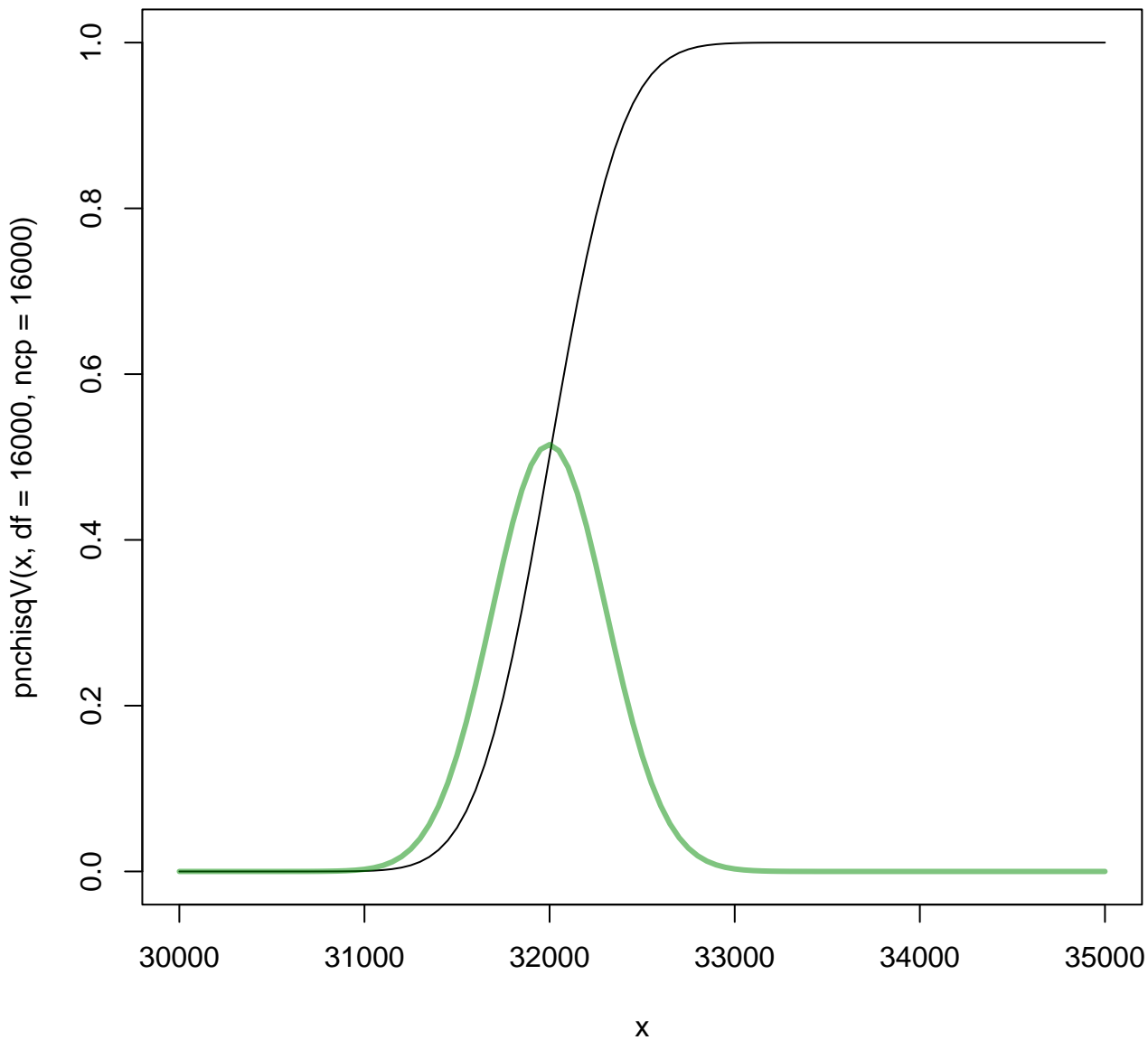
`pchisq(*, df=10000,ncp=300, log=TRUE)`



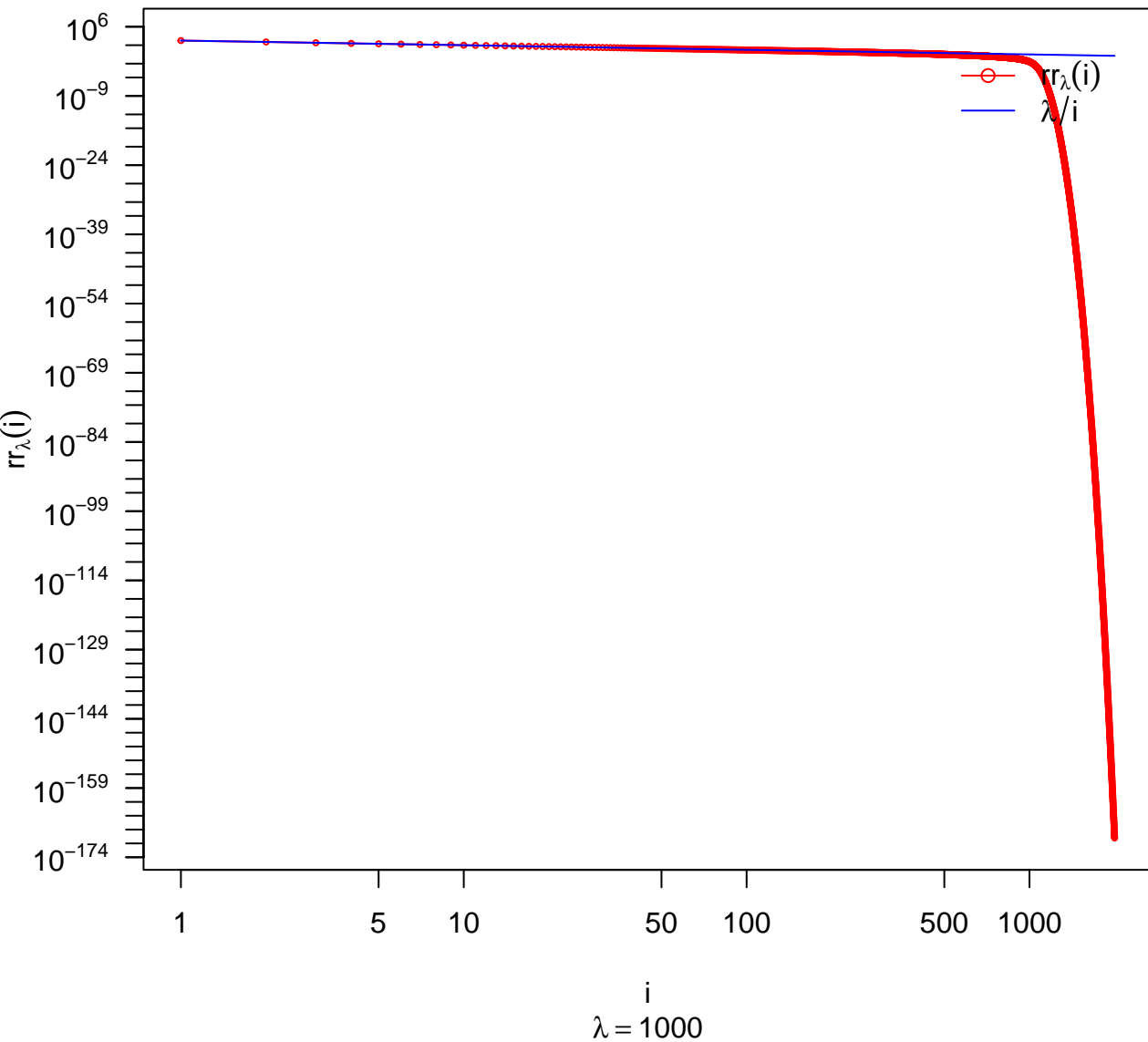
df = 10000, ncp = 4000



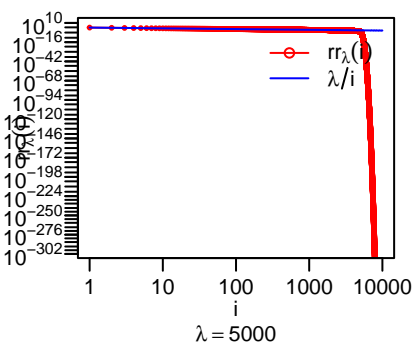
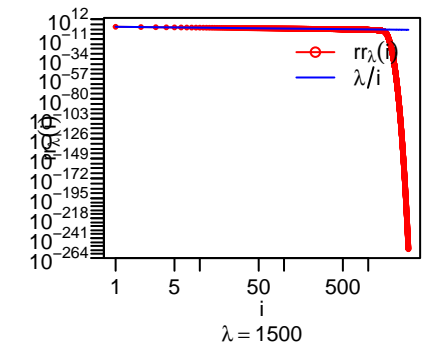
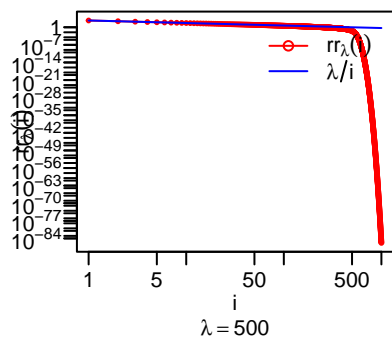
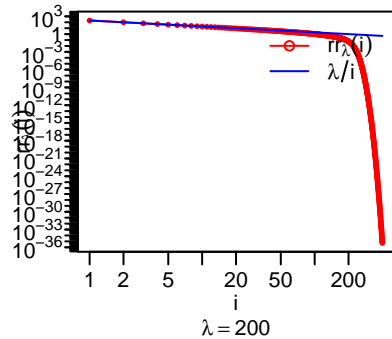
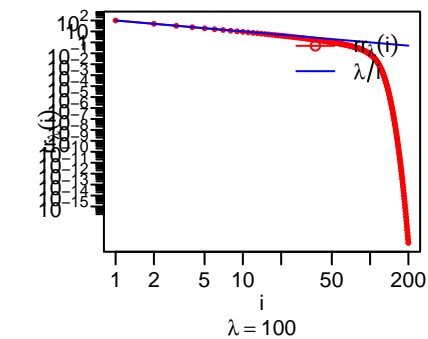
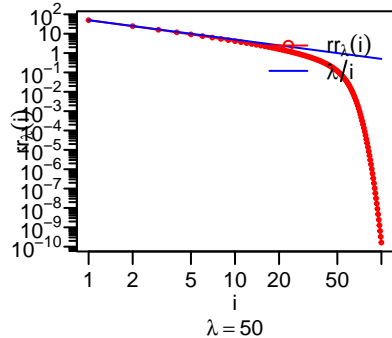
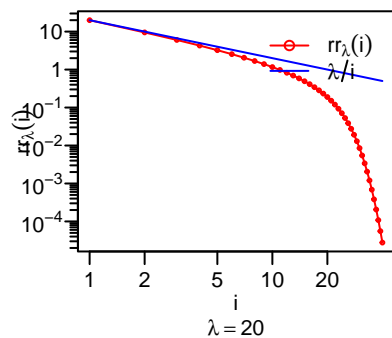
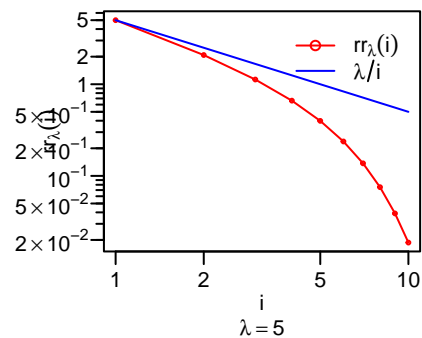
df = 16e3, ncp = 16e3



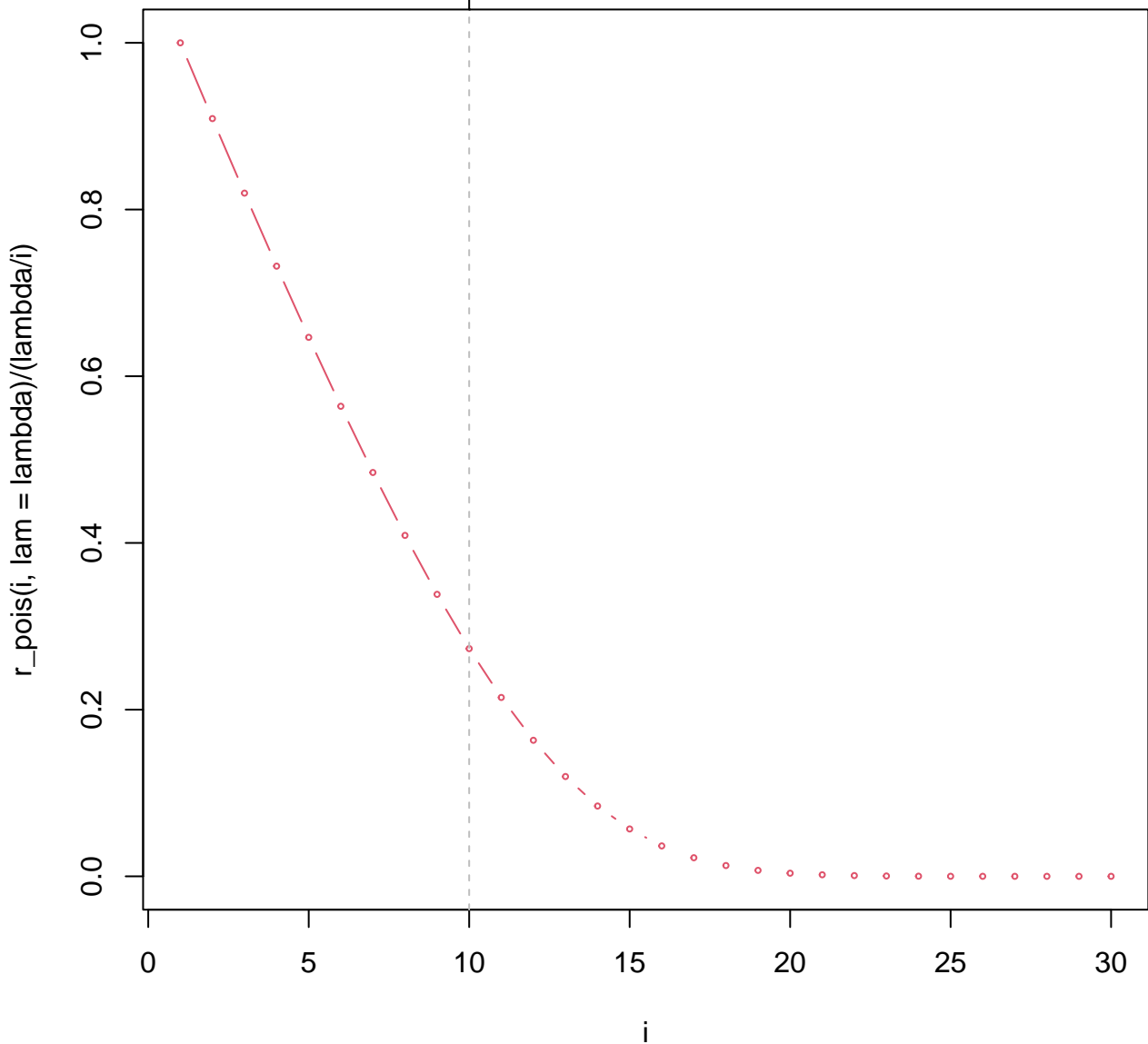
$$rr_{\lambda}(i) = \frac{\lambda^i / i!}{1 + \lambda + \lambda^2 / 2! + \dots + \lambda^{i-1} / (i-1)!}$$



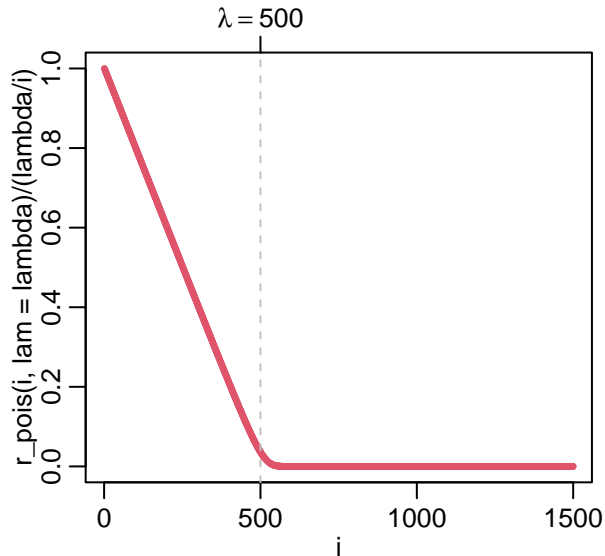
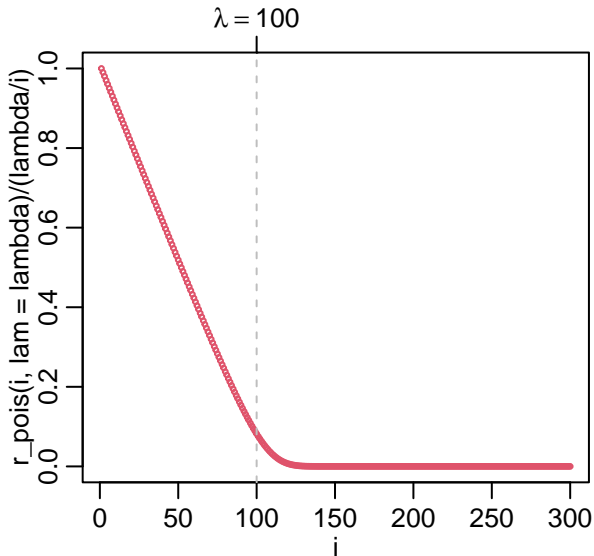
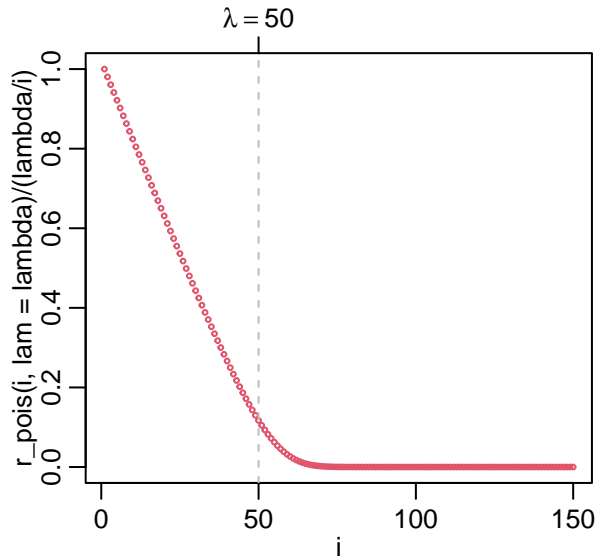
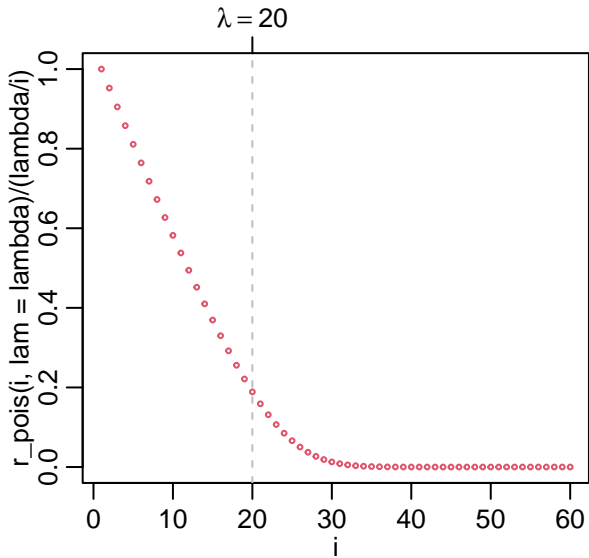
$$rr_{\lambda}(i) = \frac{\lambda^i/i!}{1 + \lambda + \lambda^2/2! + \dots + \lambda^{i-1}/(i-1)!}$$



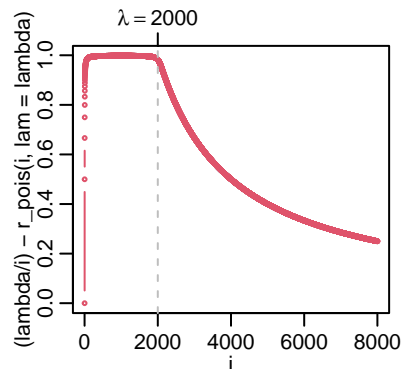
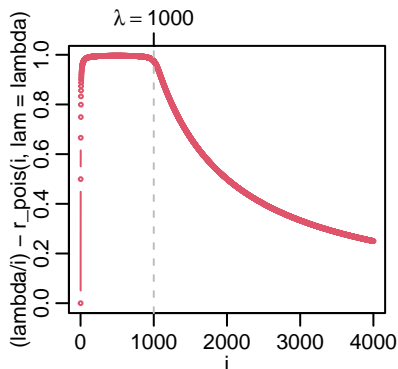
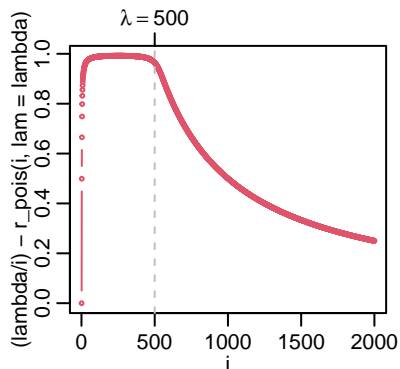
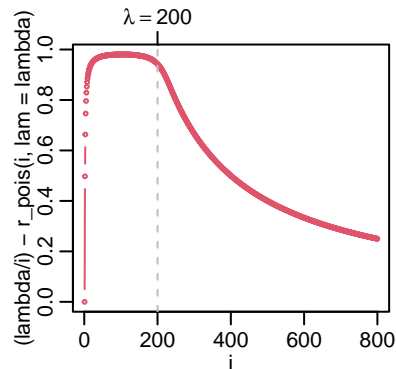
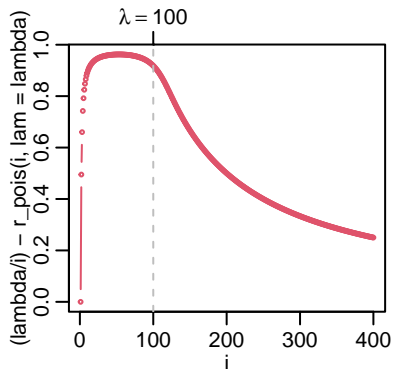
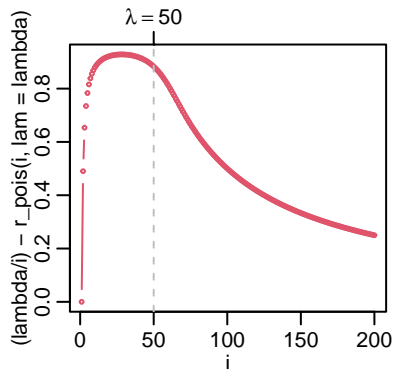
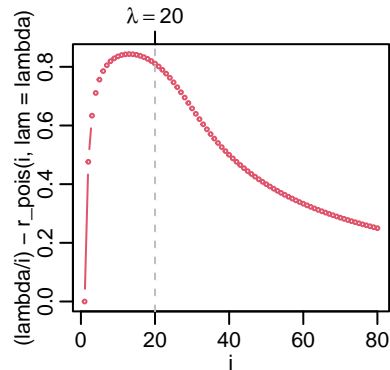
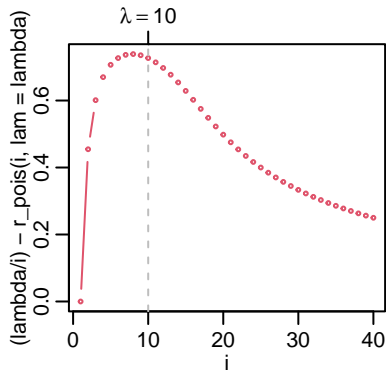
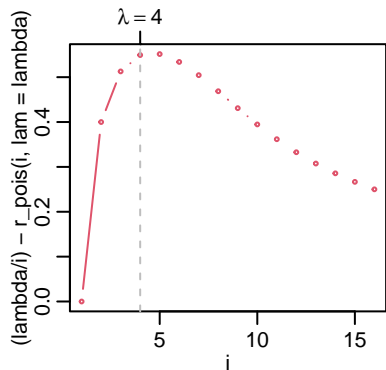
$\lambda = 10$

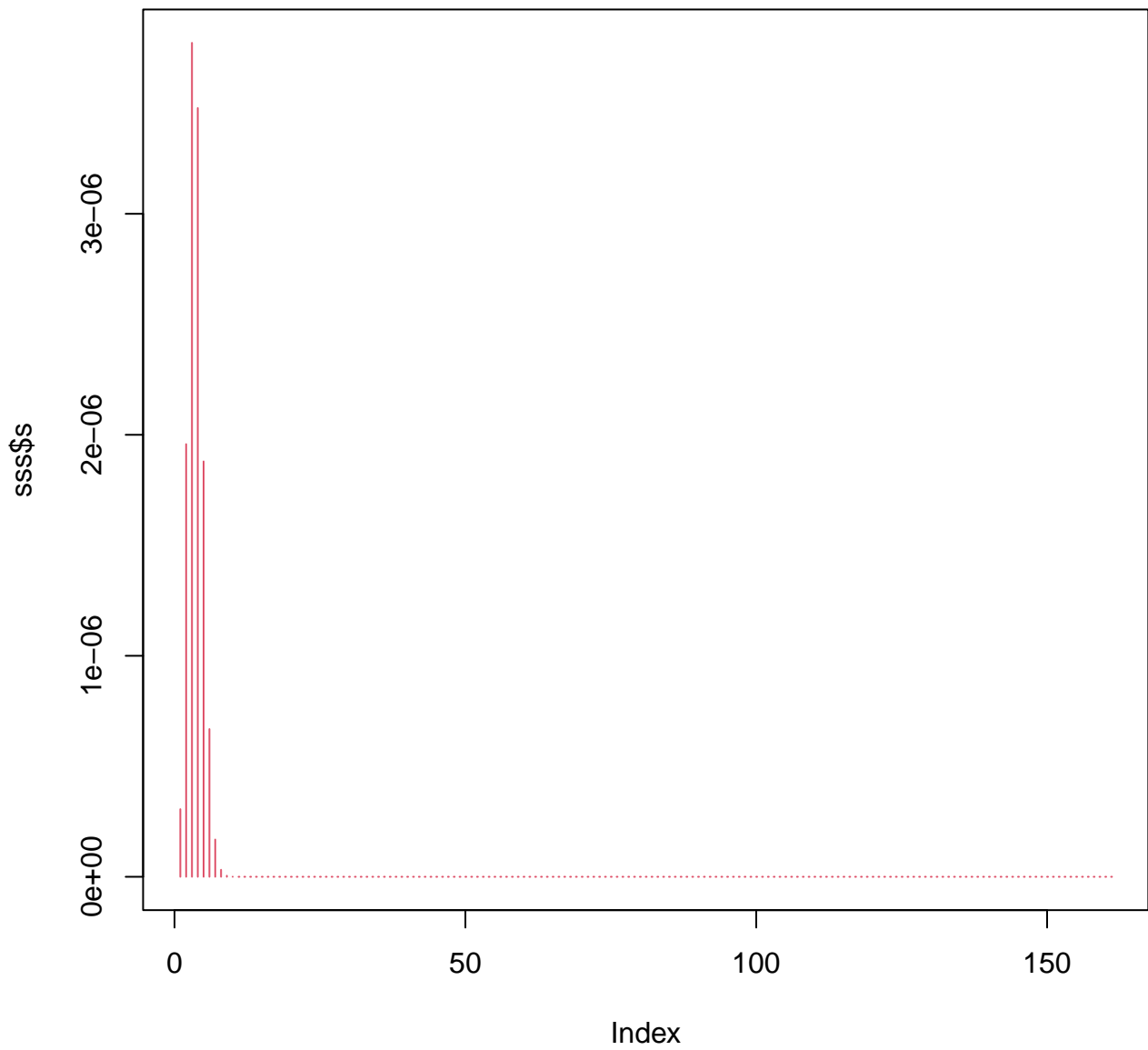


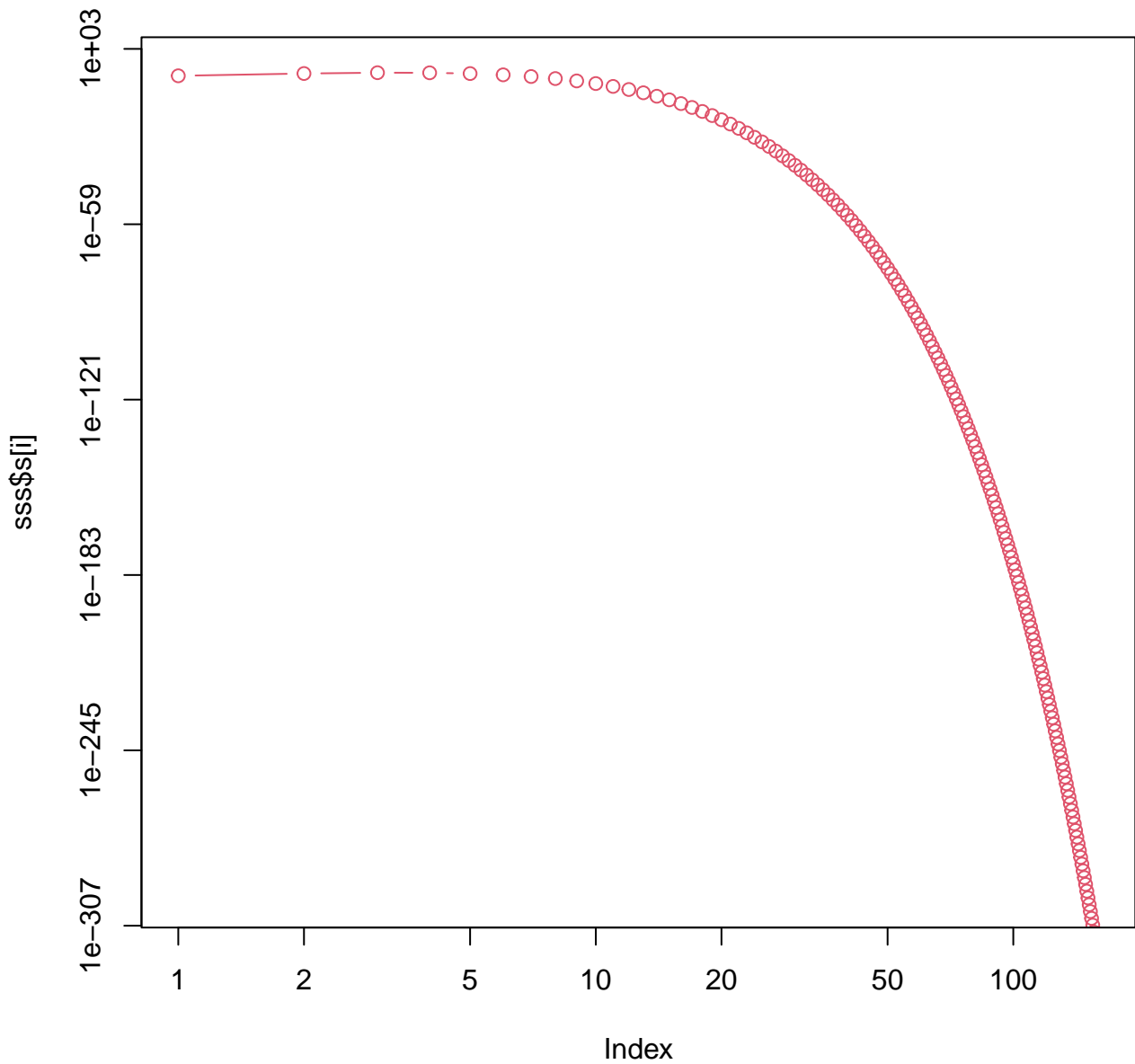
$r_{\text{pois}}(i) / (\text{lambda}/i)$

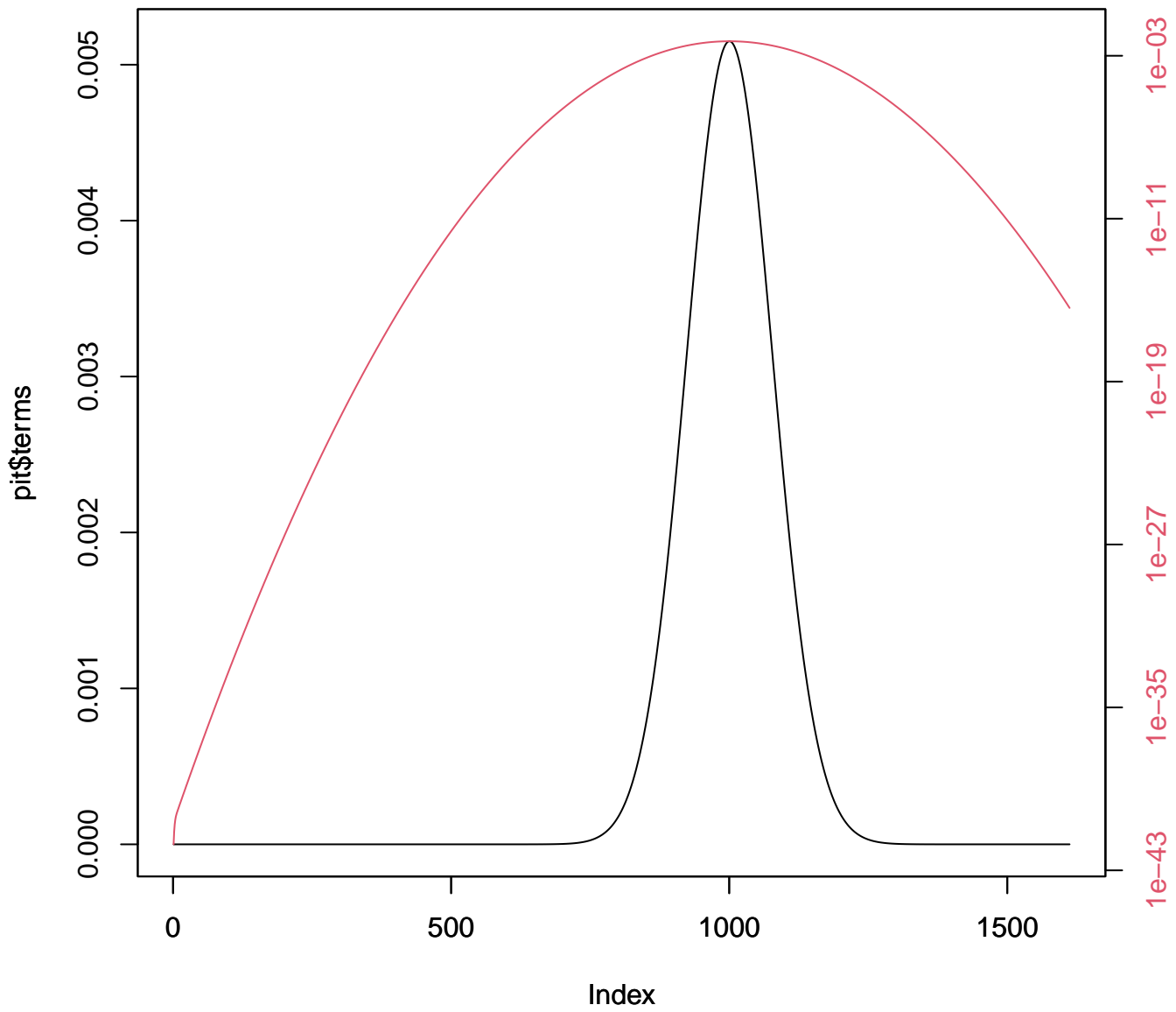


plotDr(λ)

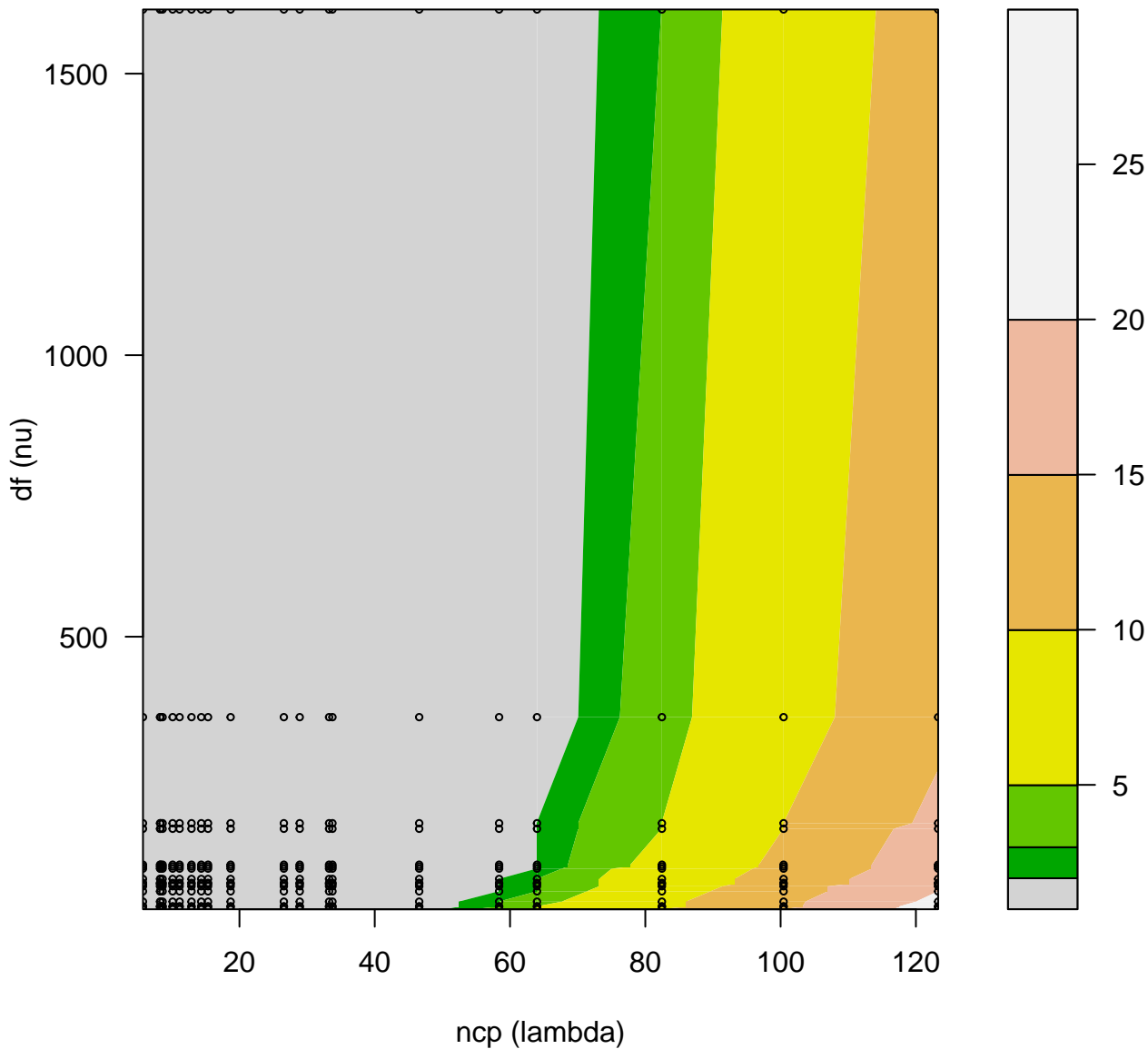




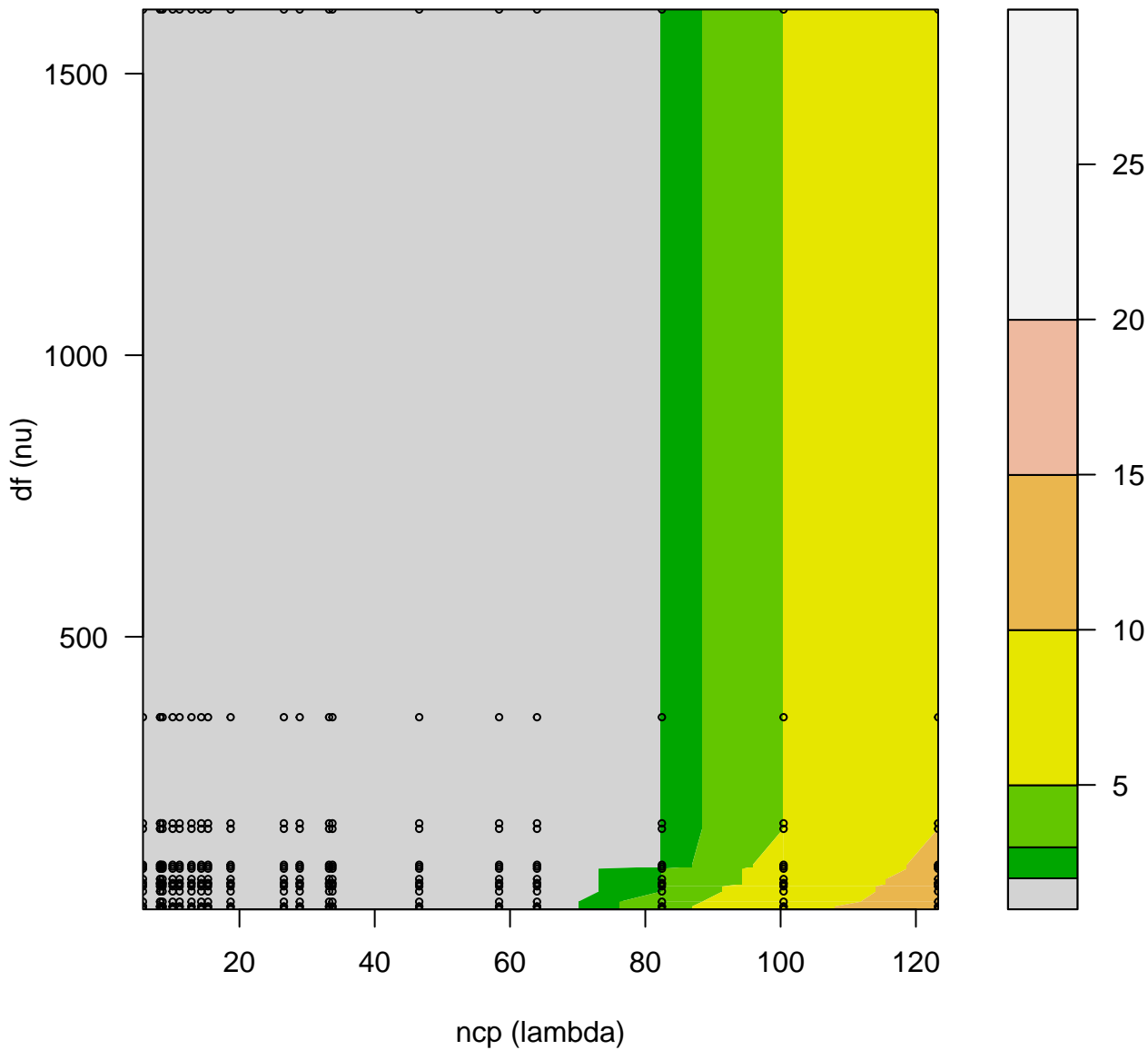




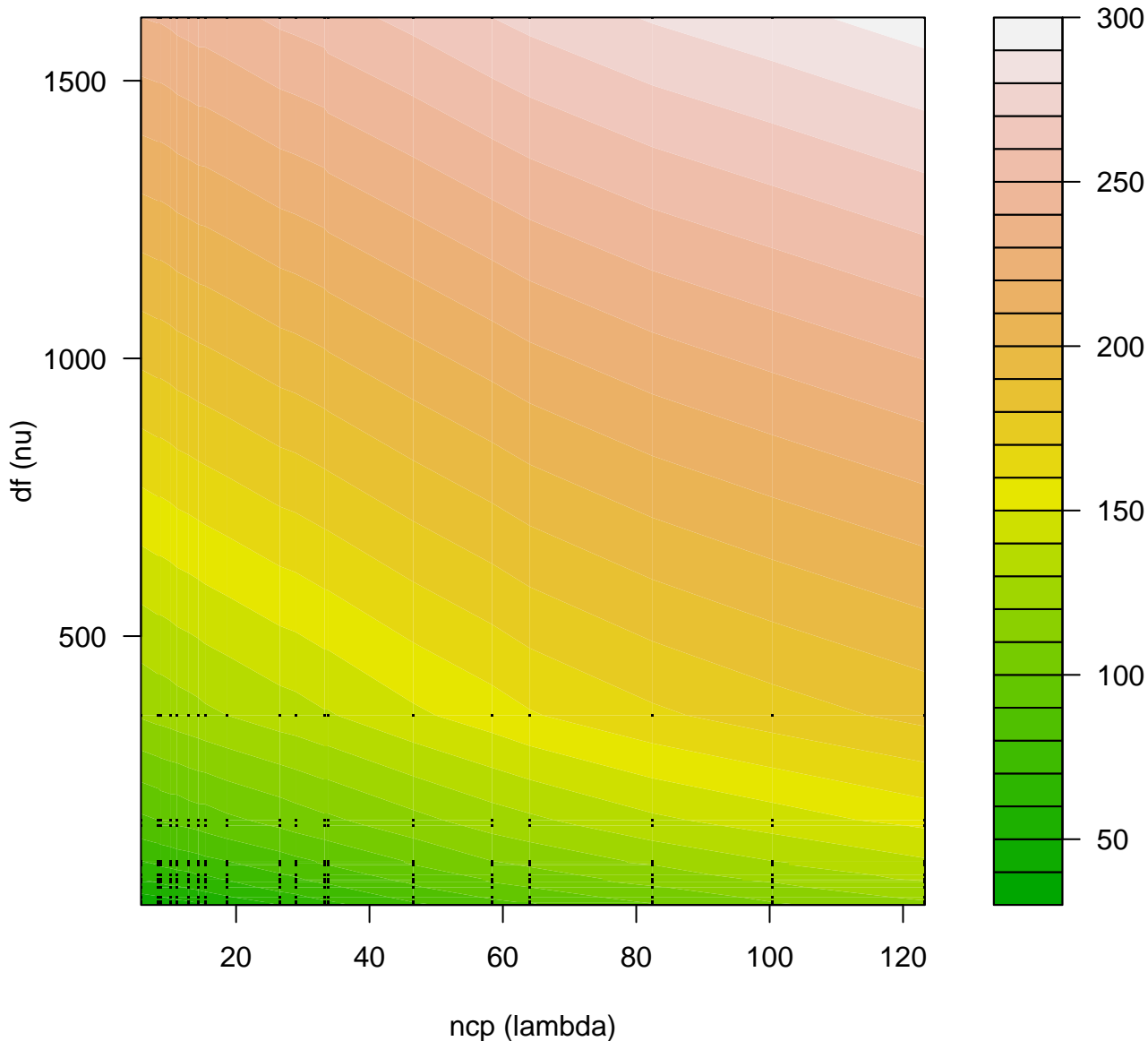
ssR[iN1 ,, 6] (i.e., x=50%-perc.)



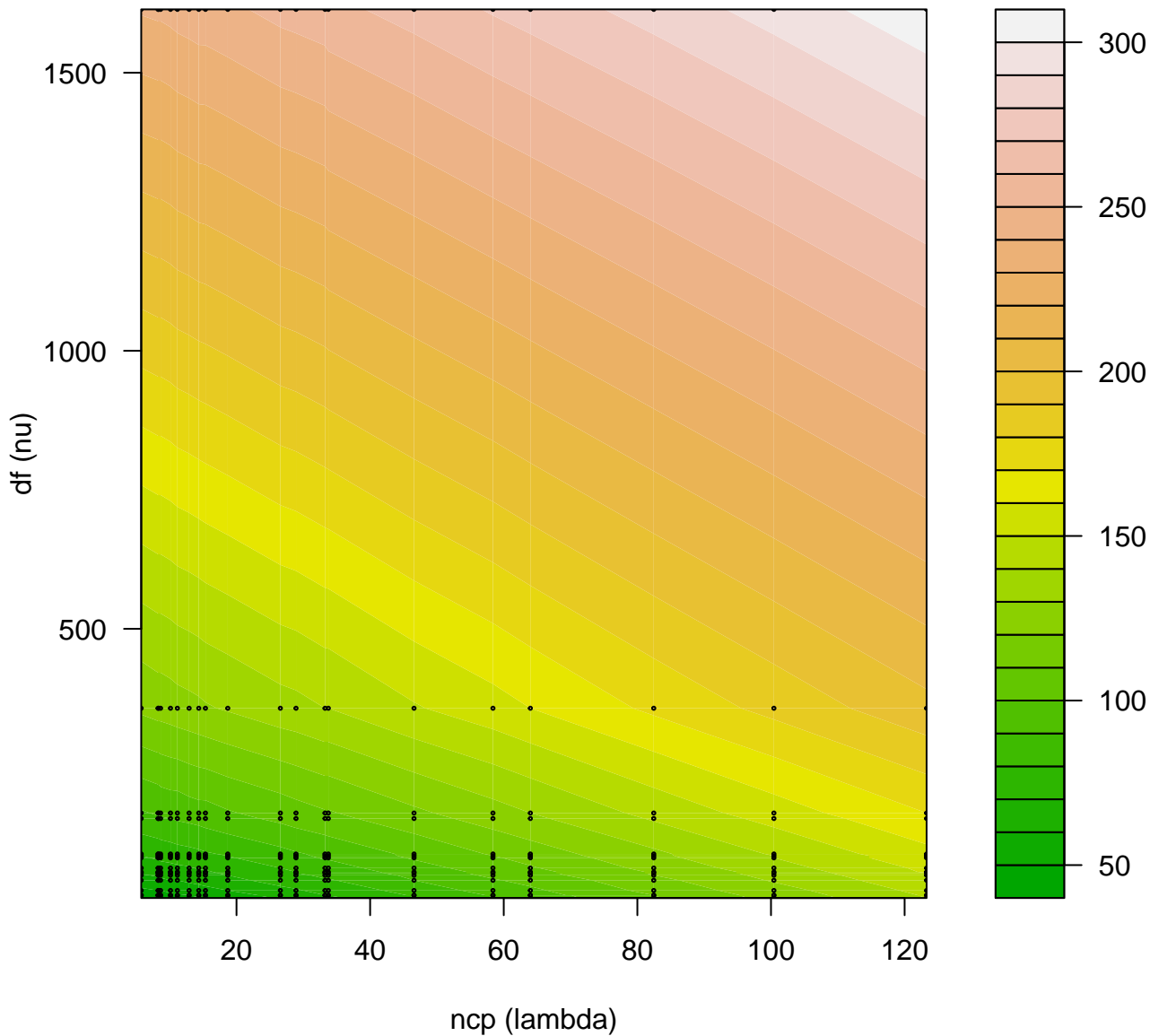
ssR[iN1 ,, 1] (i.e., x=1%-perc.)



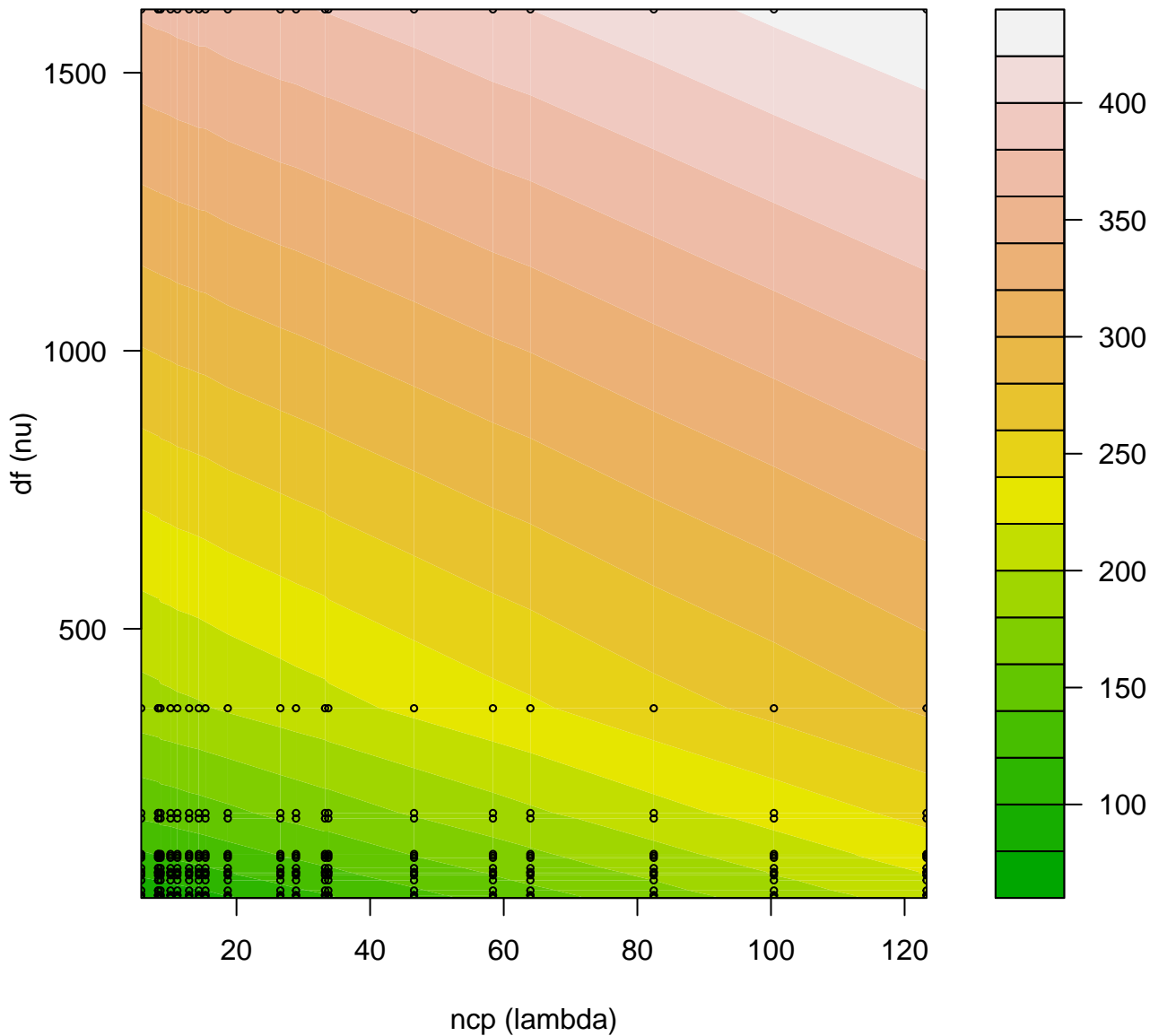
Spread ssR['iN2 - iN1' ,,, 6] (i.e., x=50%-perc.)

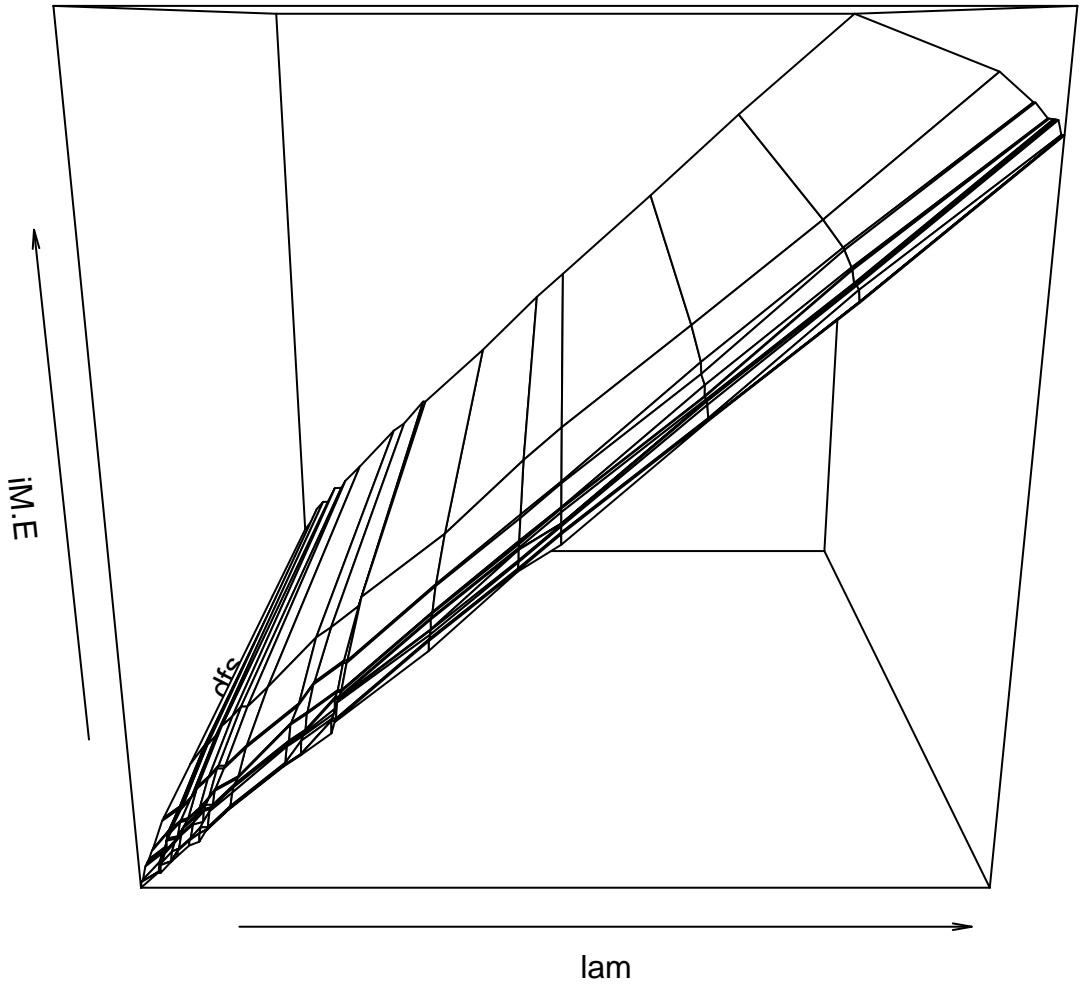


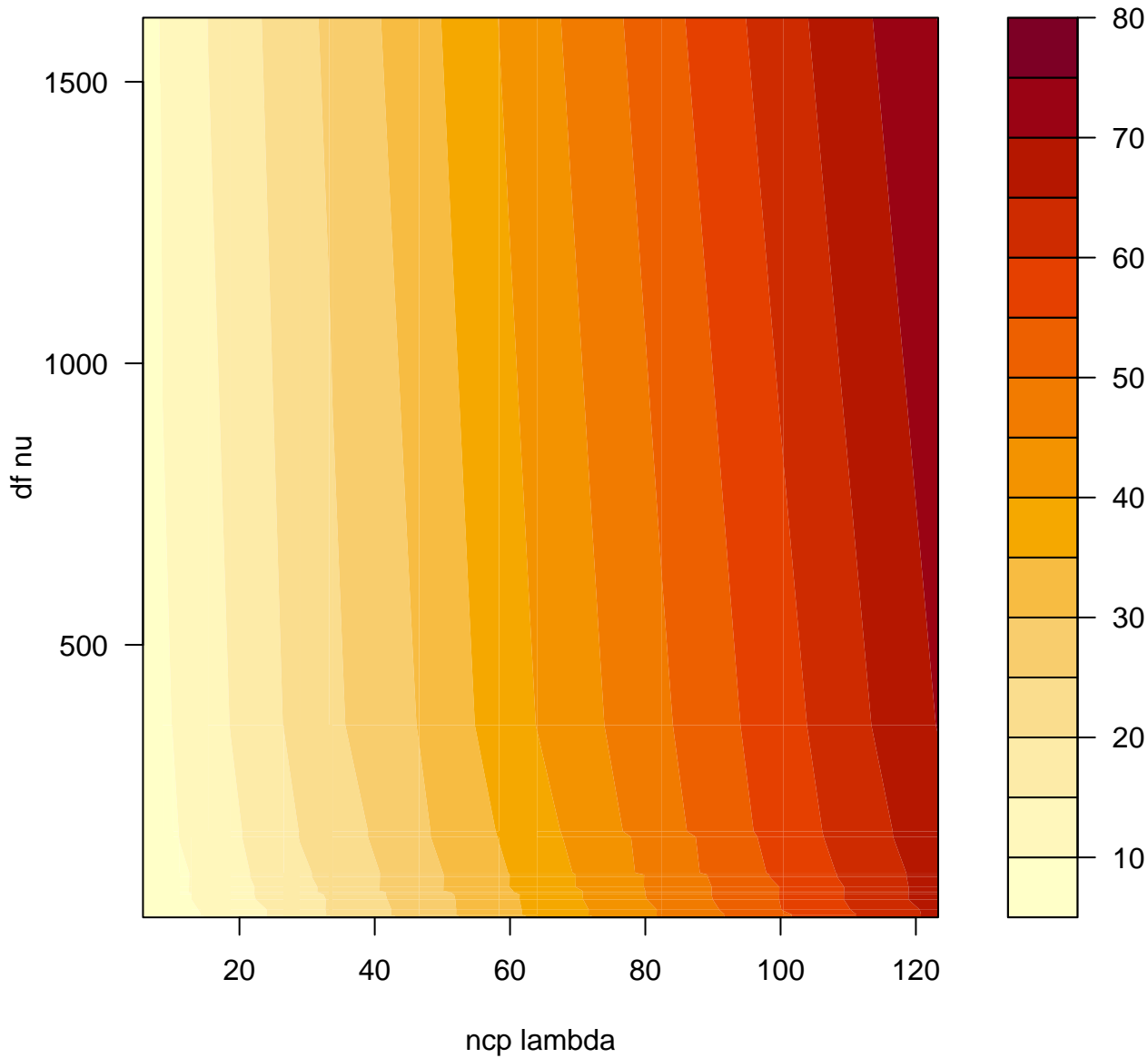
ssR[iN2 ,,, 6] (i.e., x=50%-perc.)



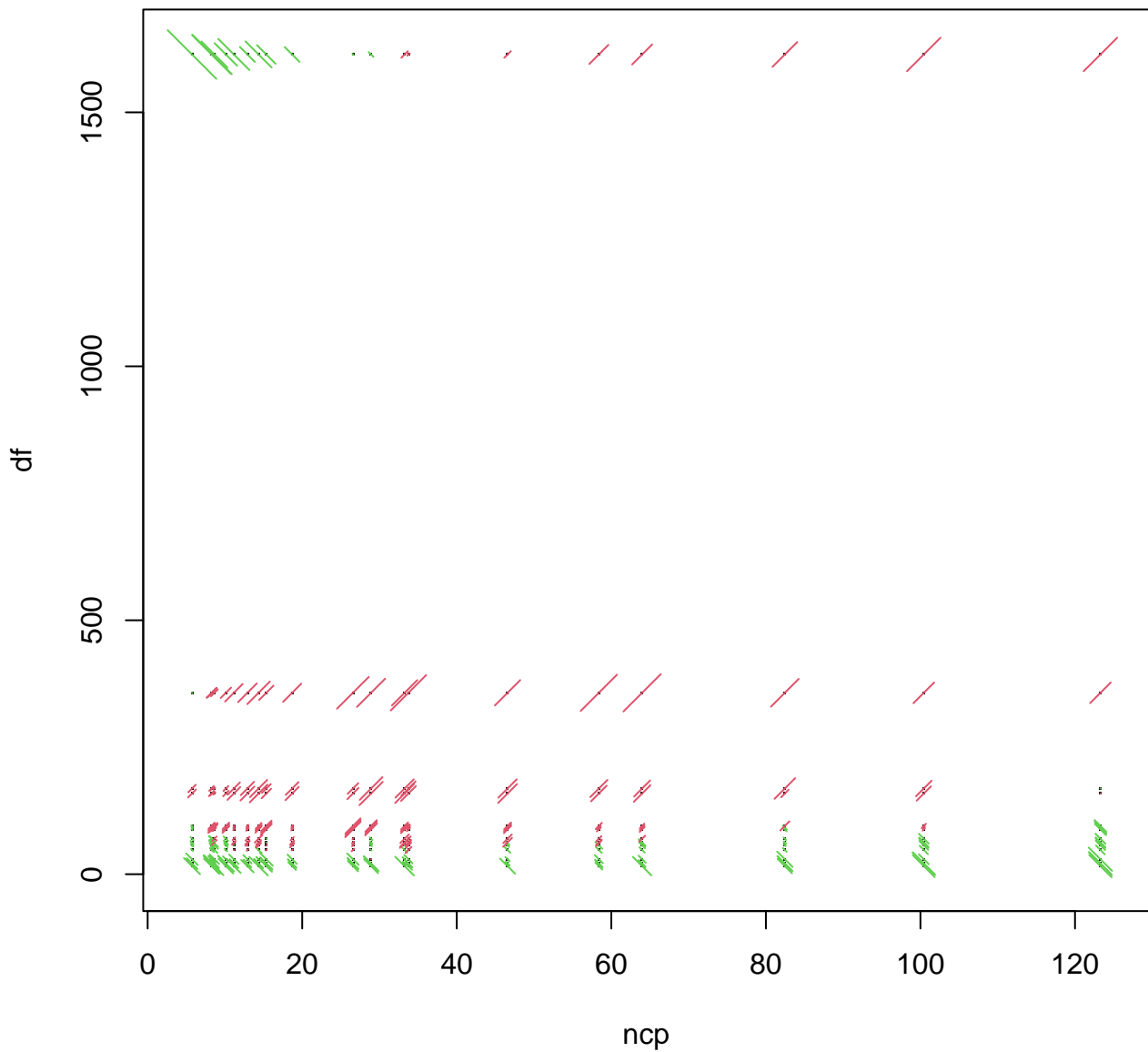
ssR[iN2 ,, 12] (i.e., x=99.99%-perc.)

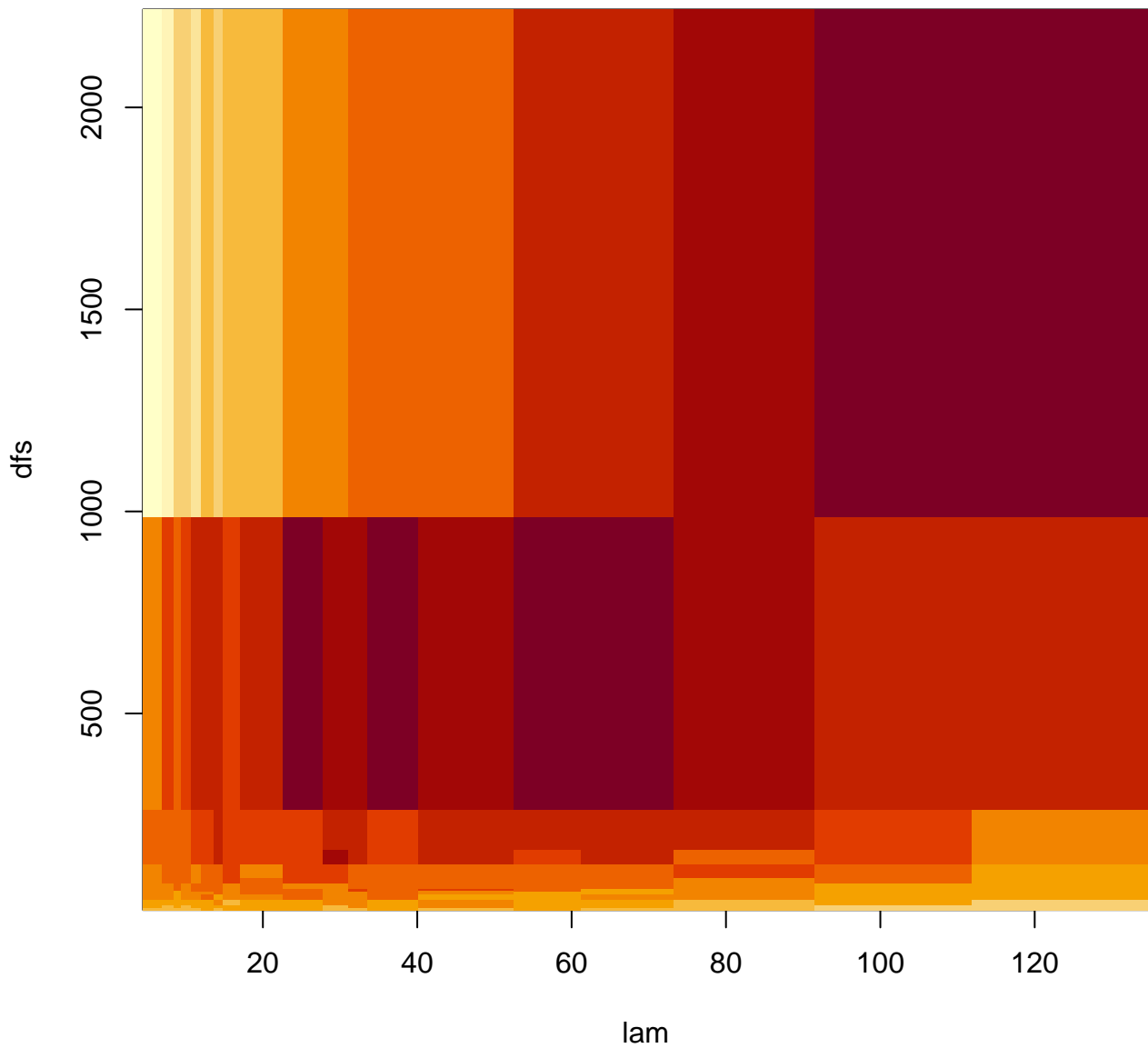




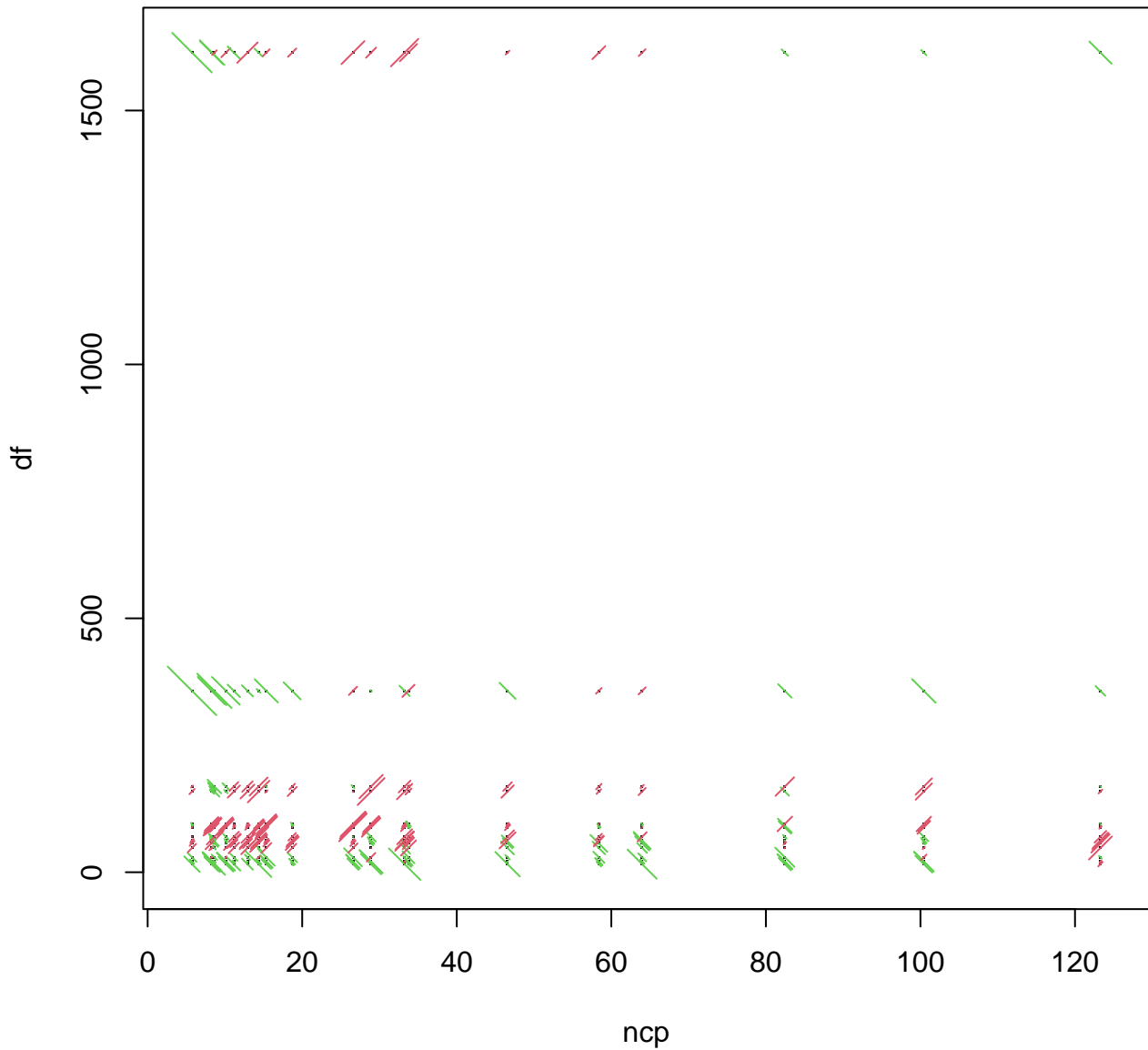


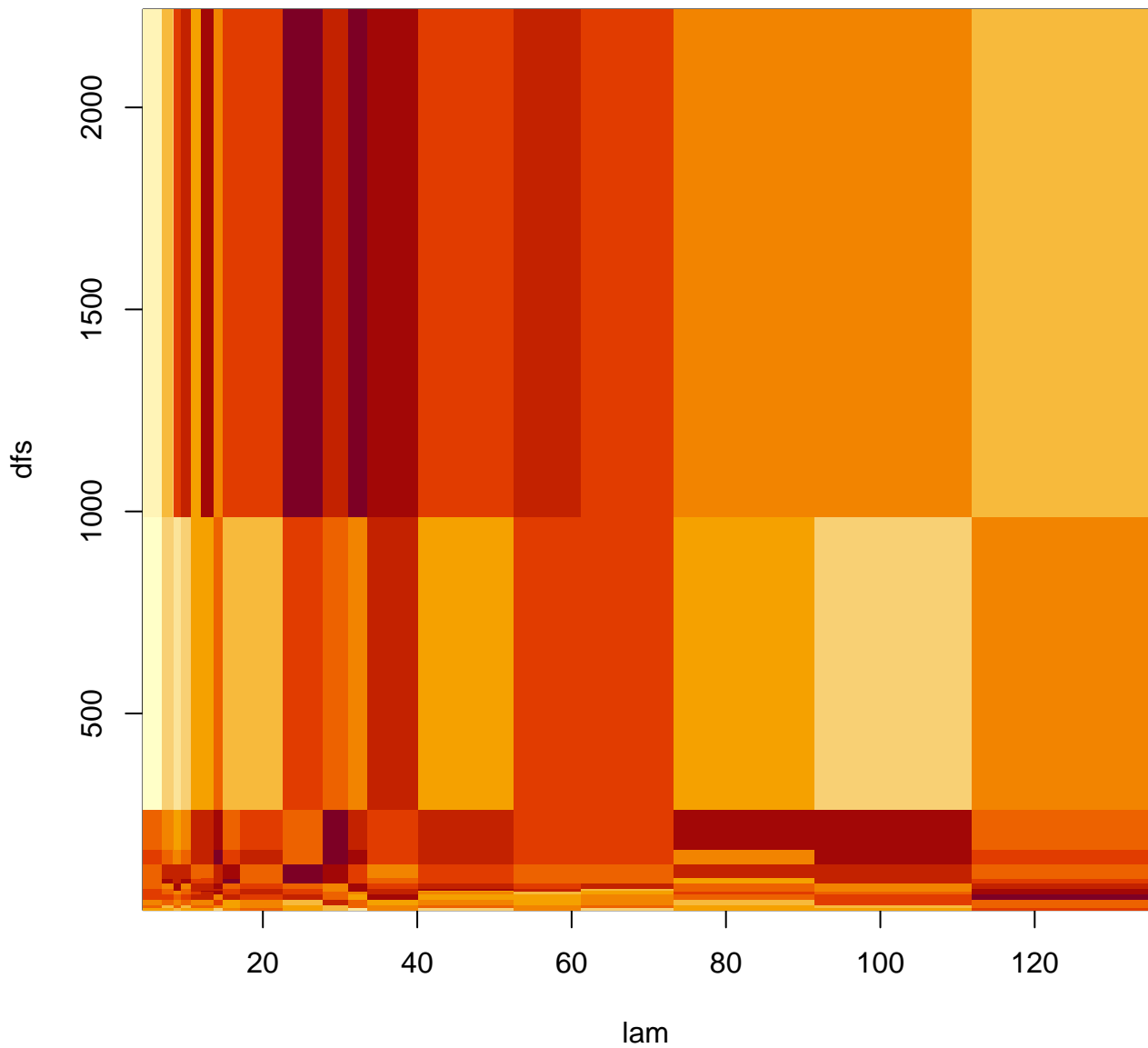
residuals(lm1)

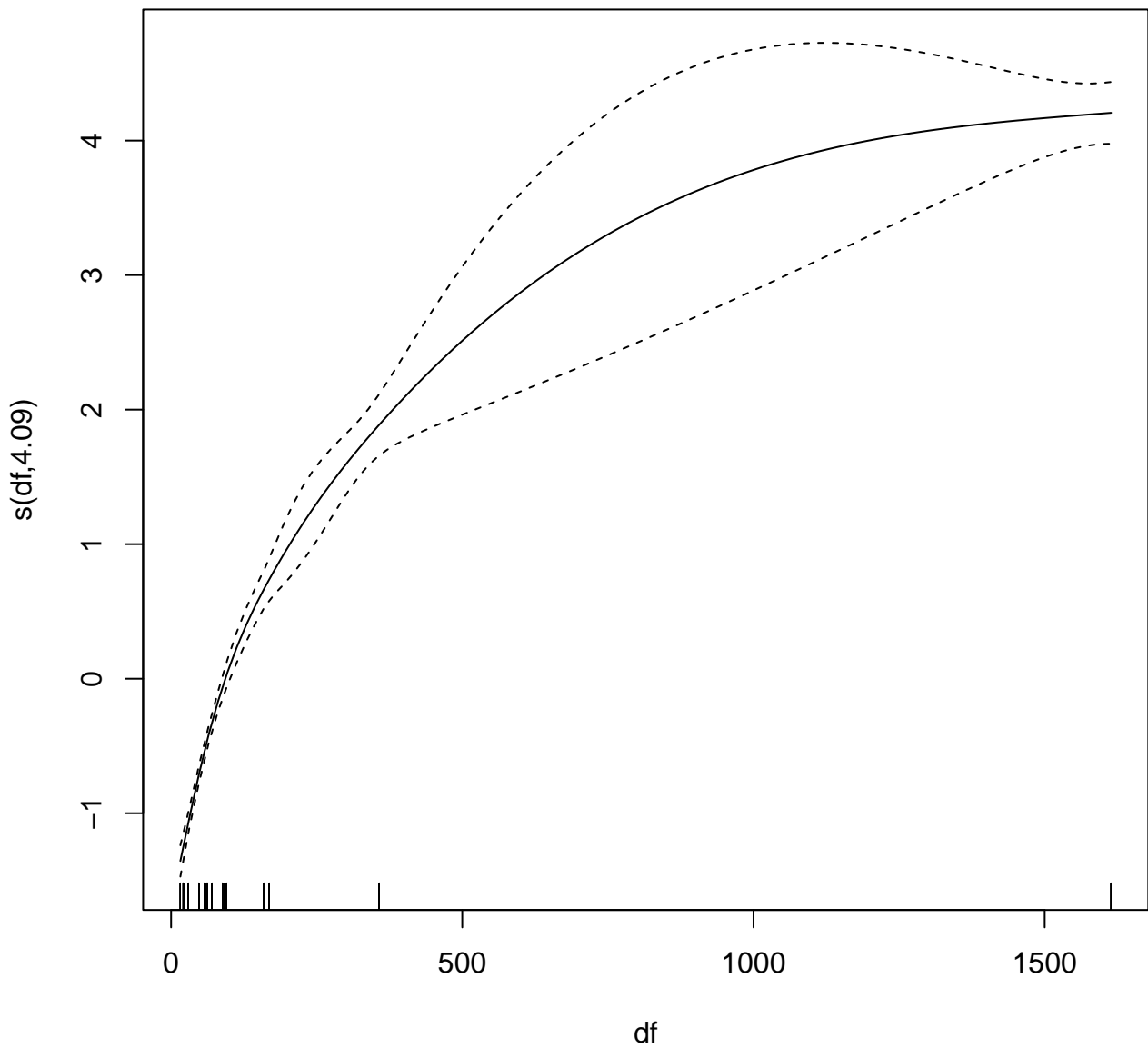




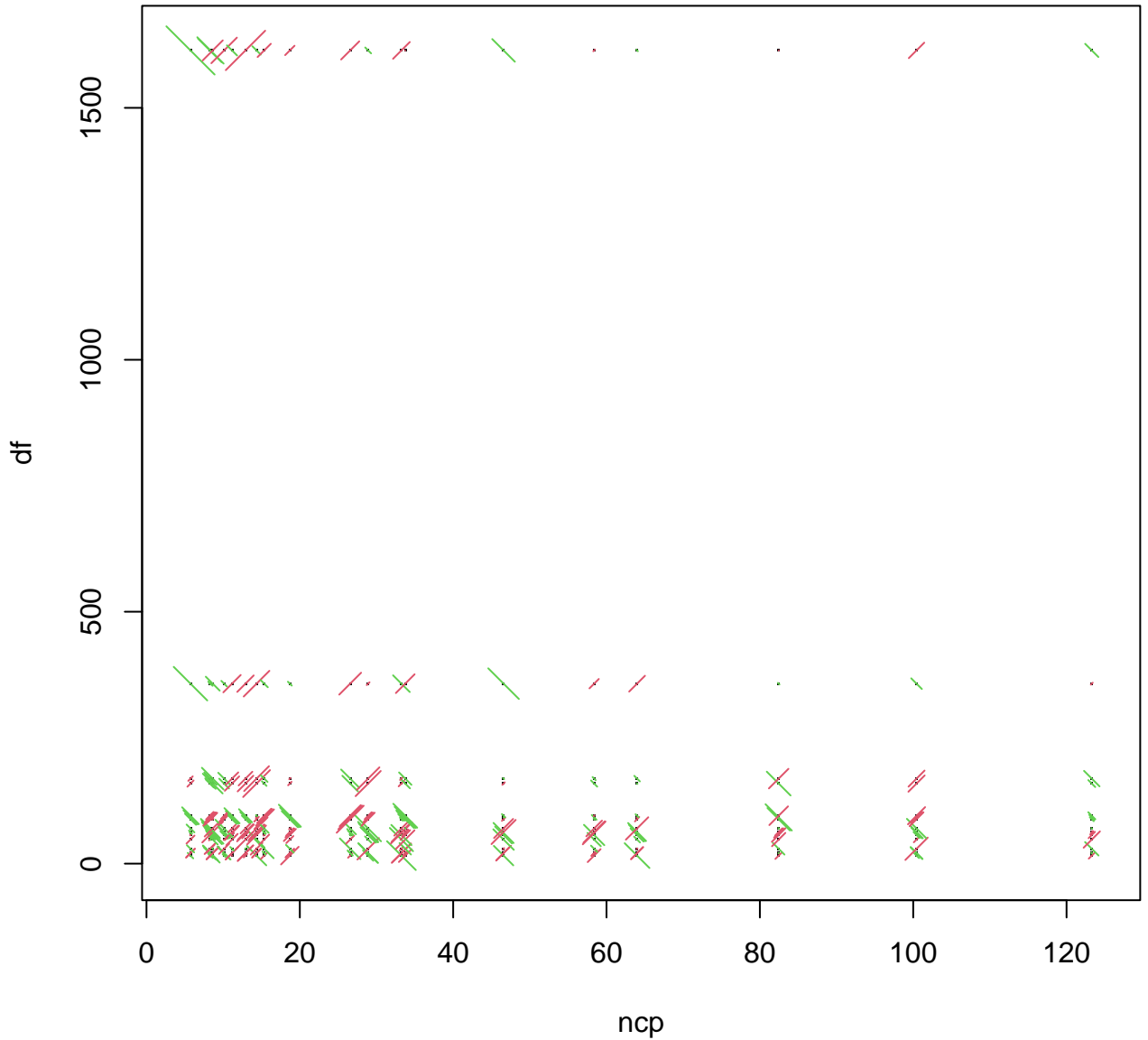
residuals(lm3)

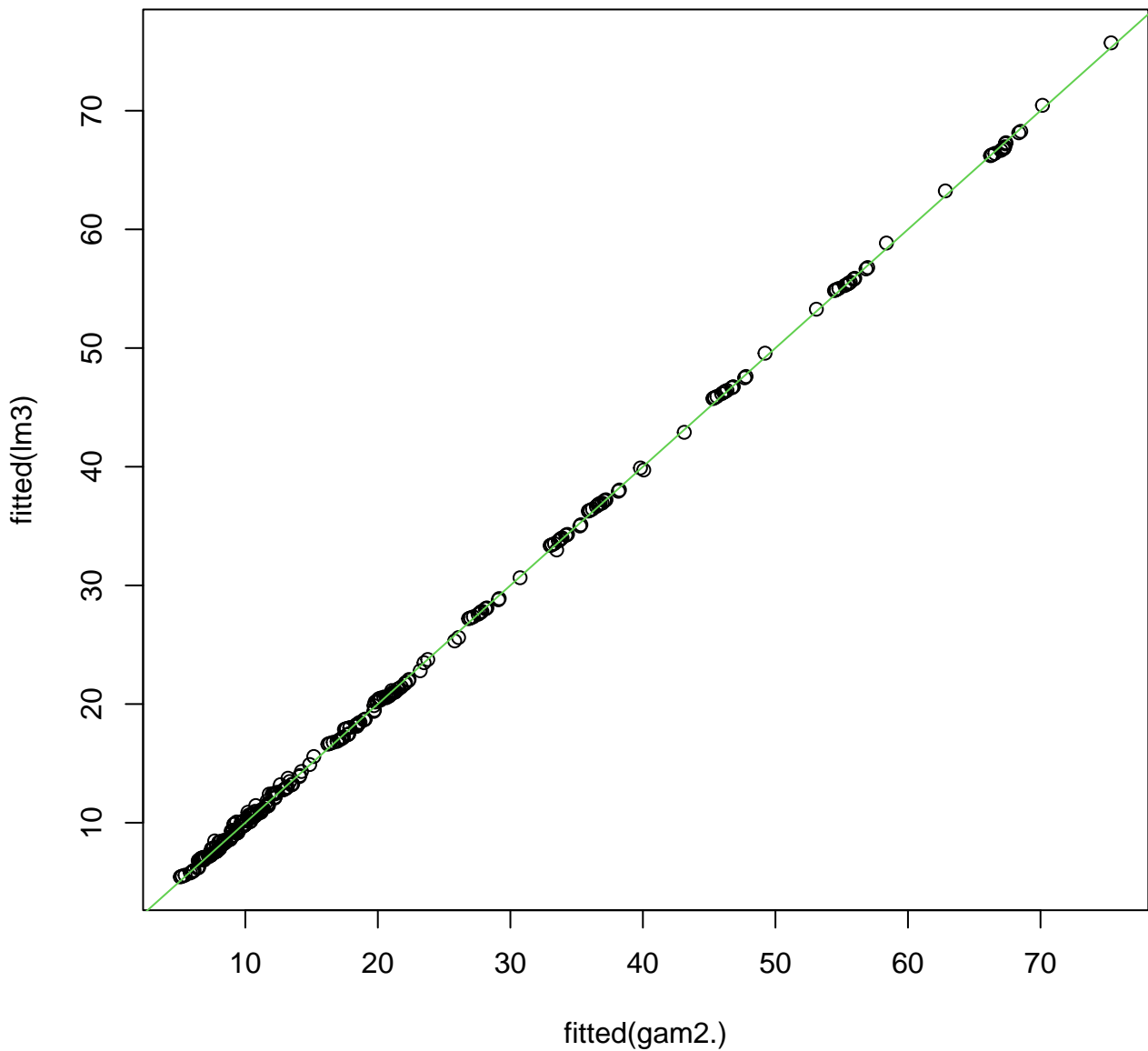


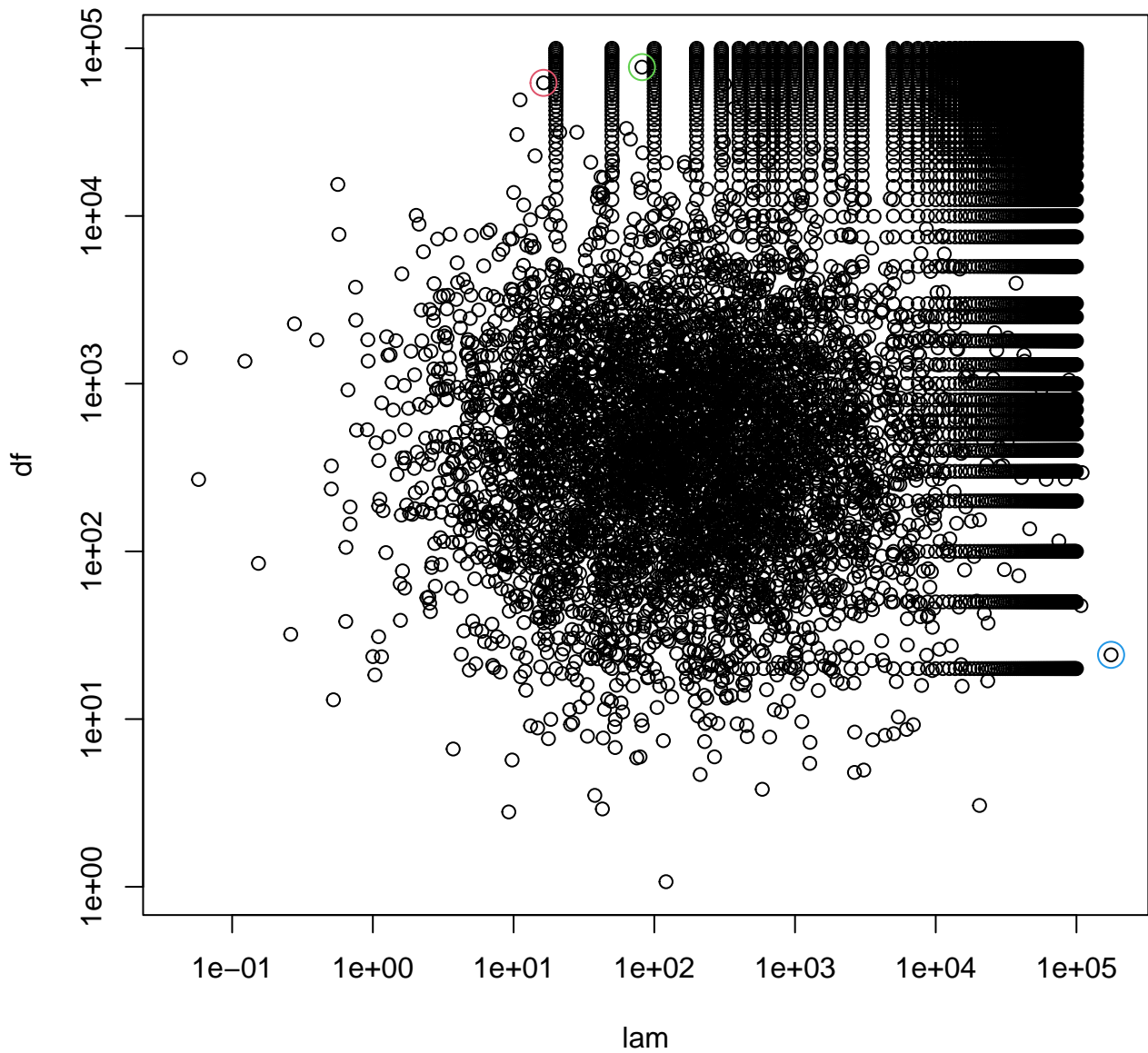


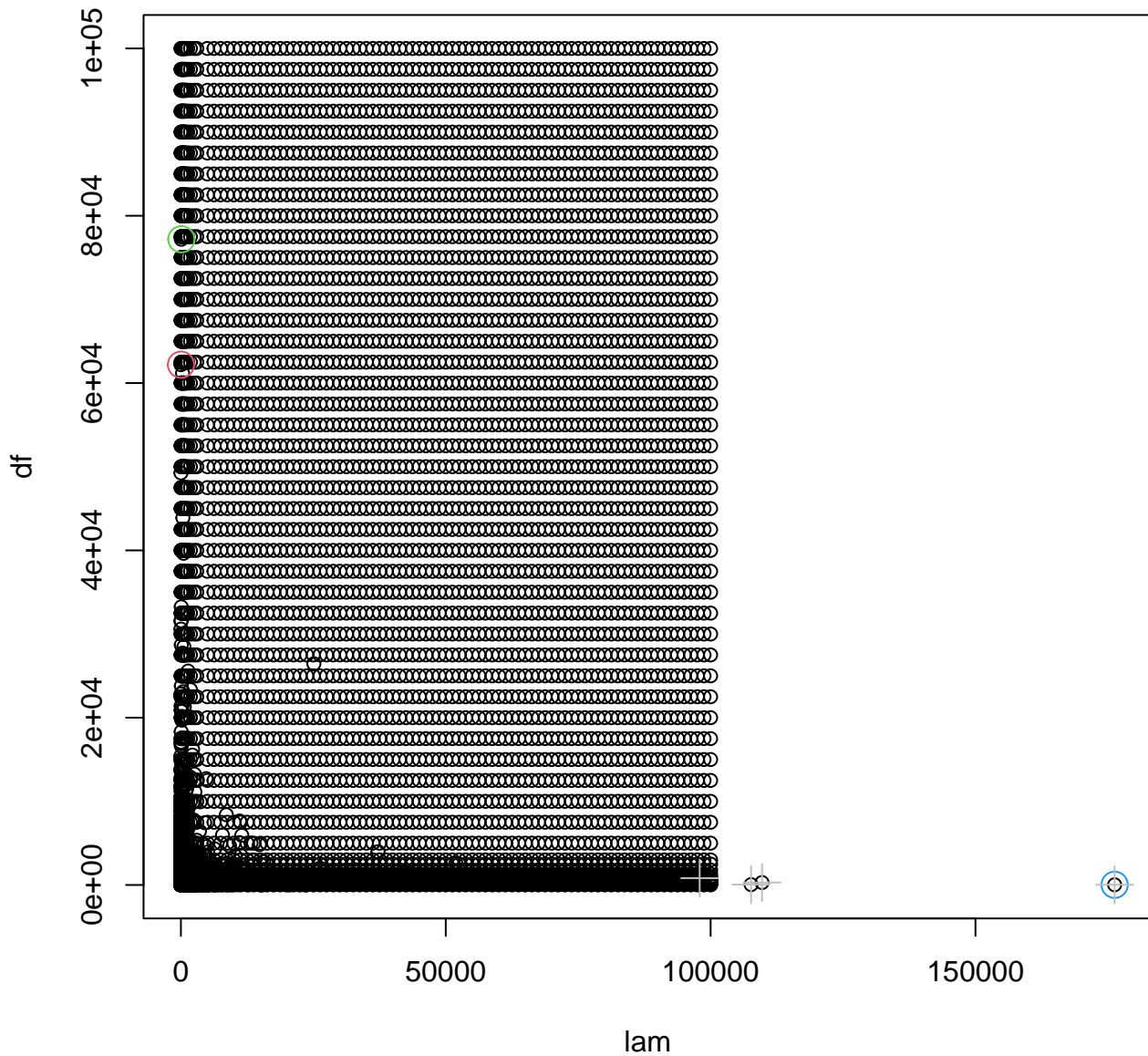


residuals(gam2.)

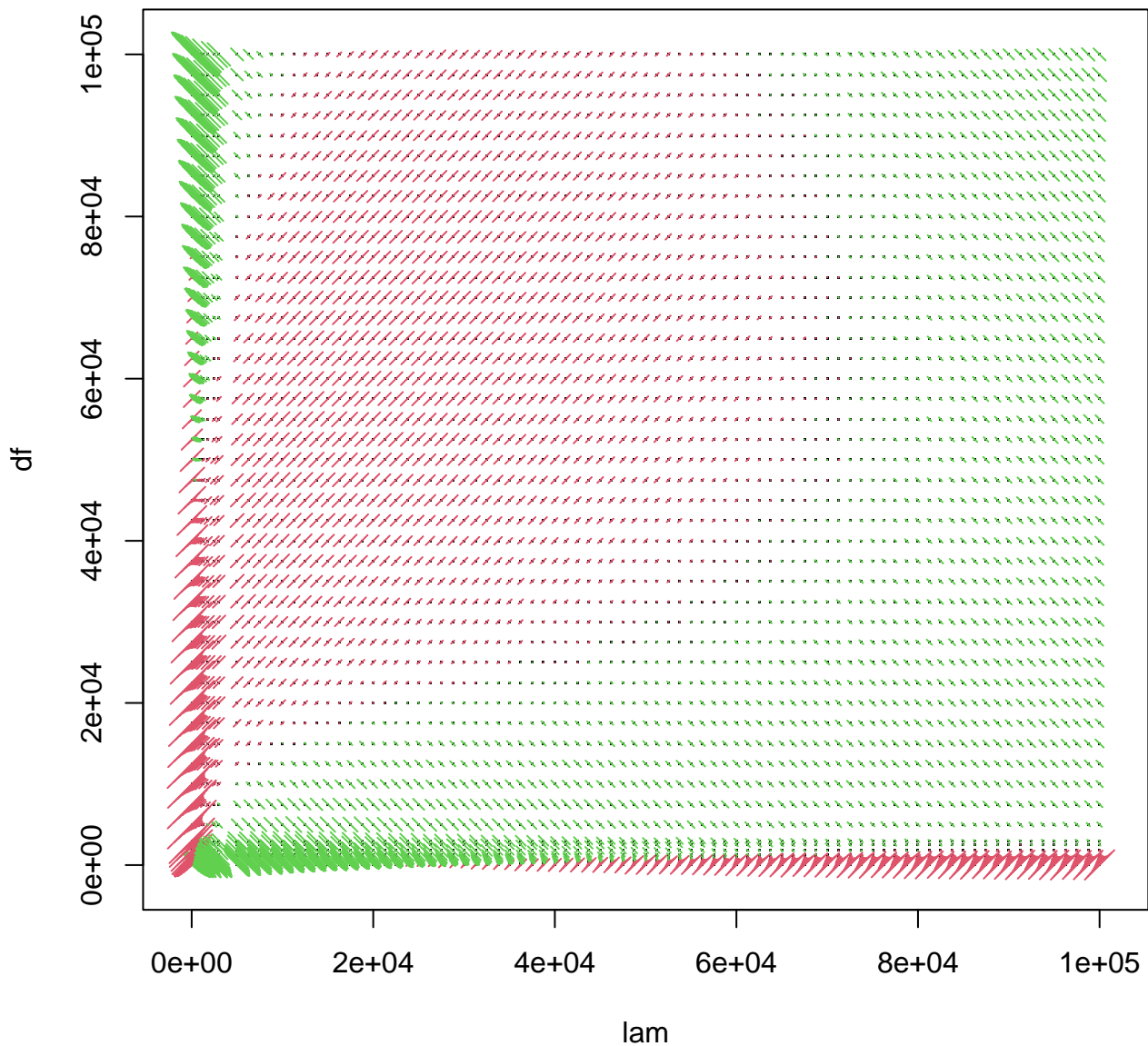




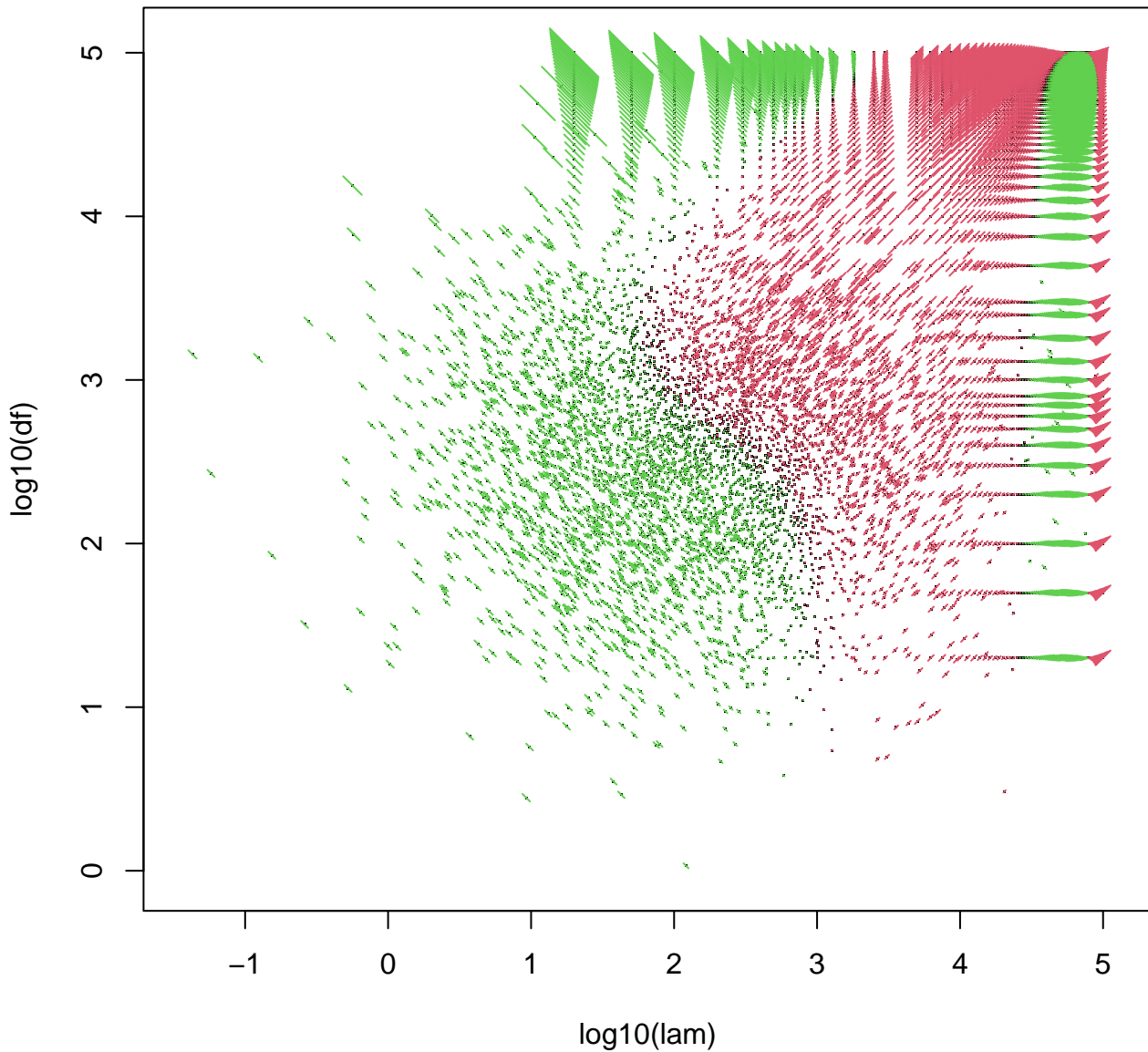




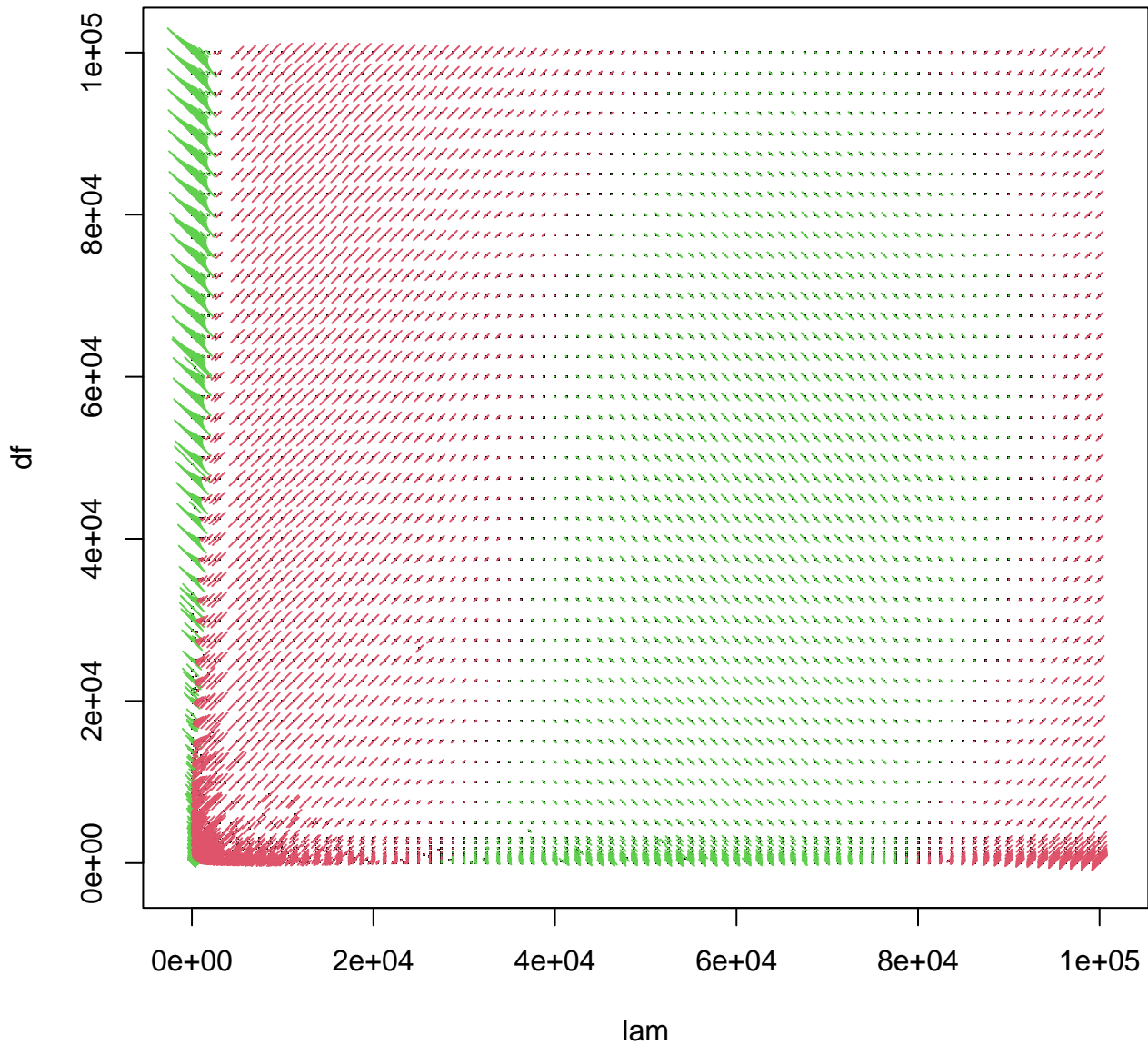
residuals(l.15)



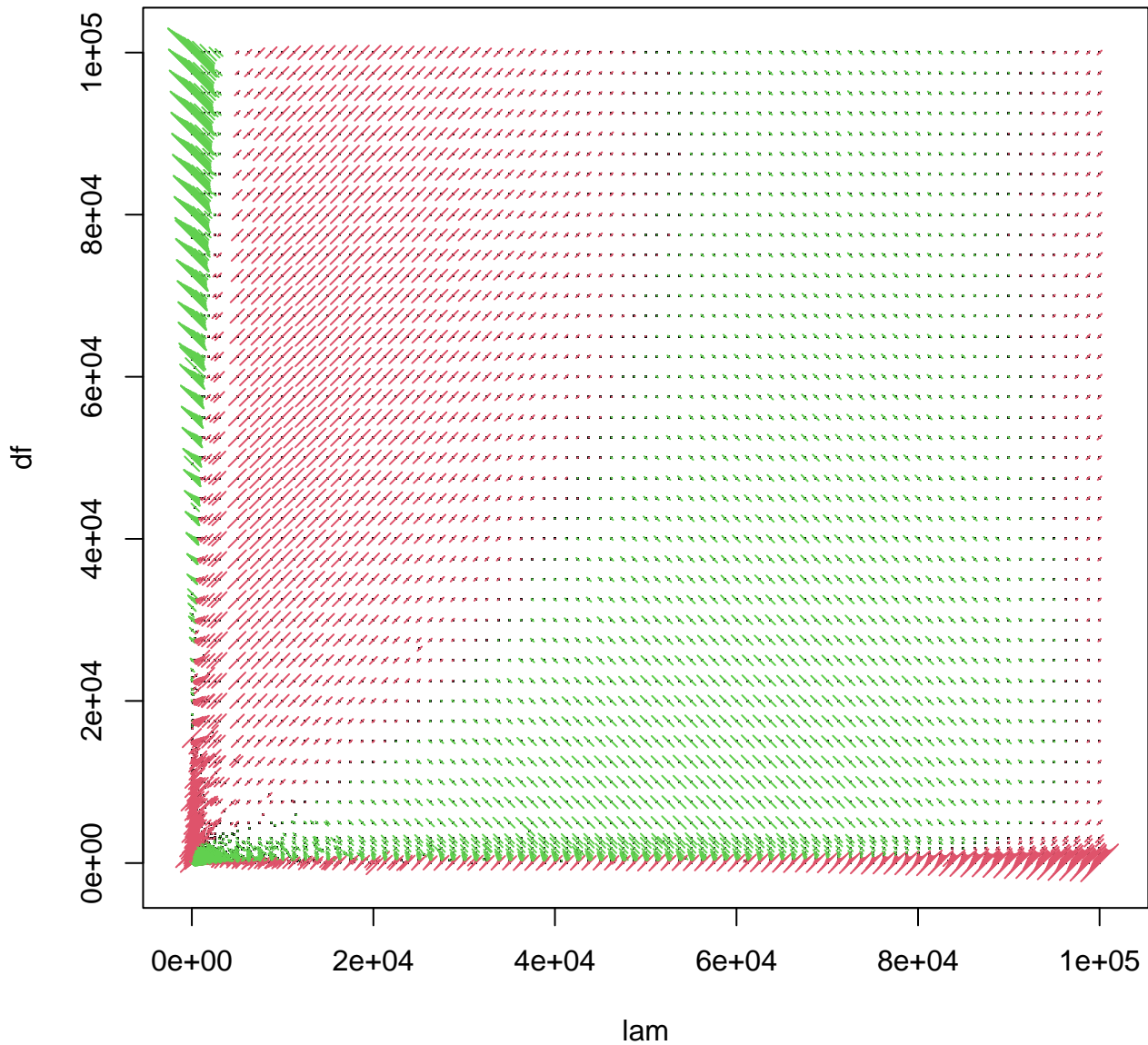
residuals(l.5)



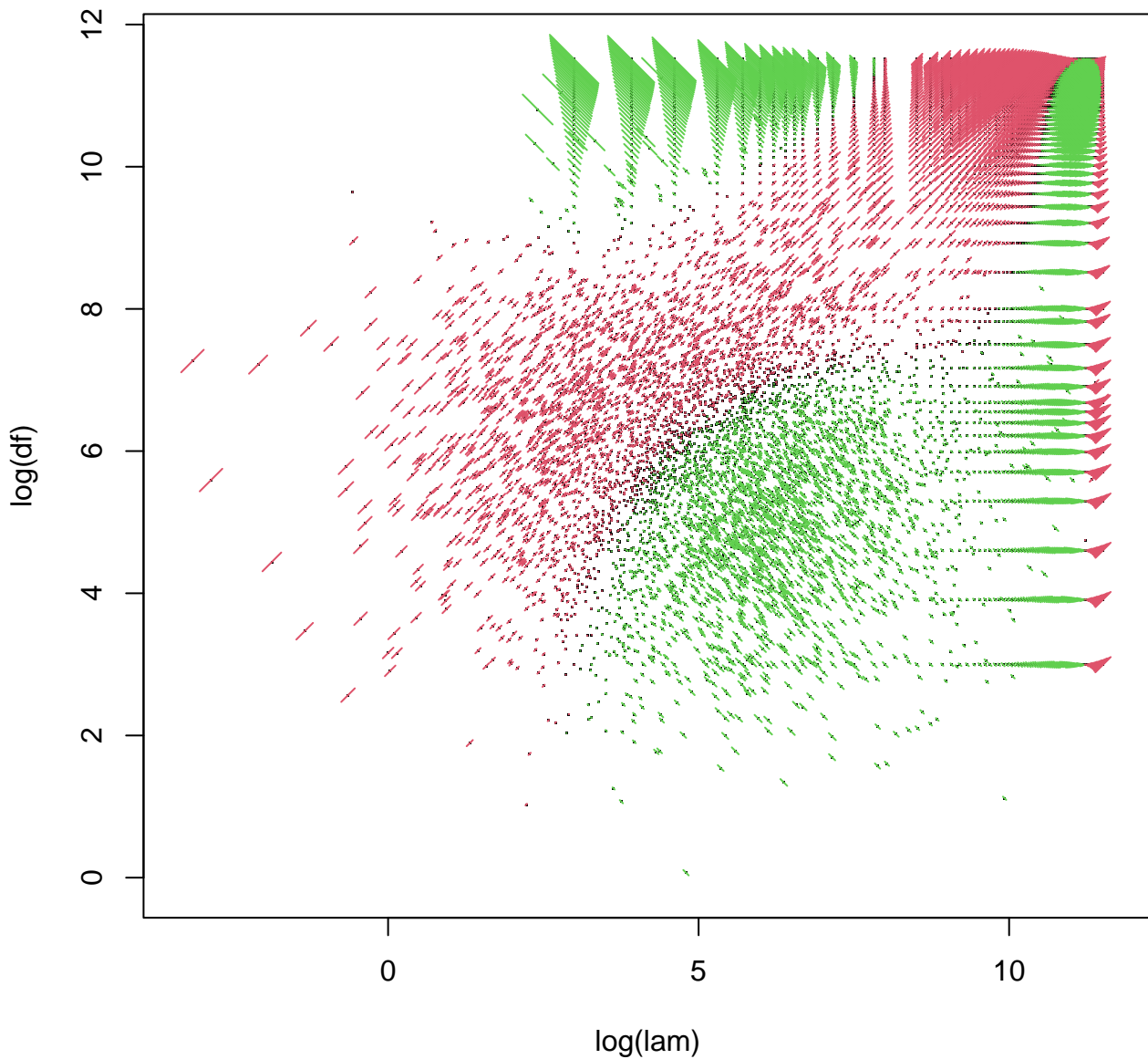
residuals(l.5)



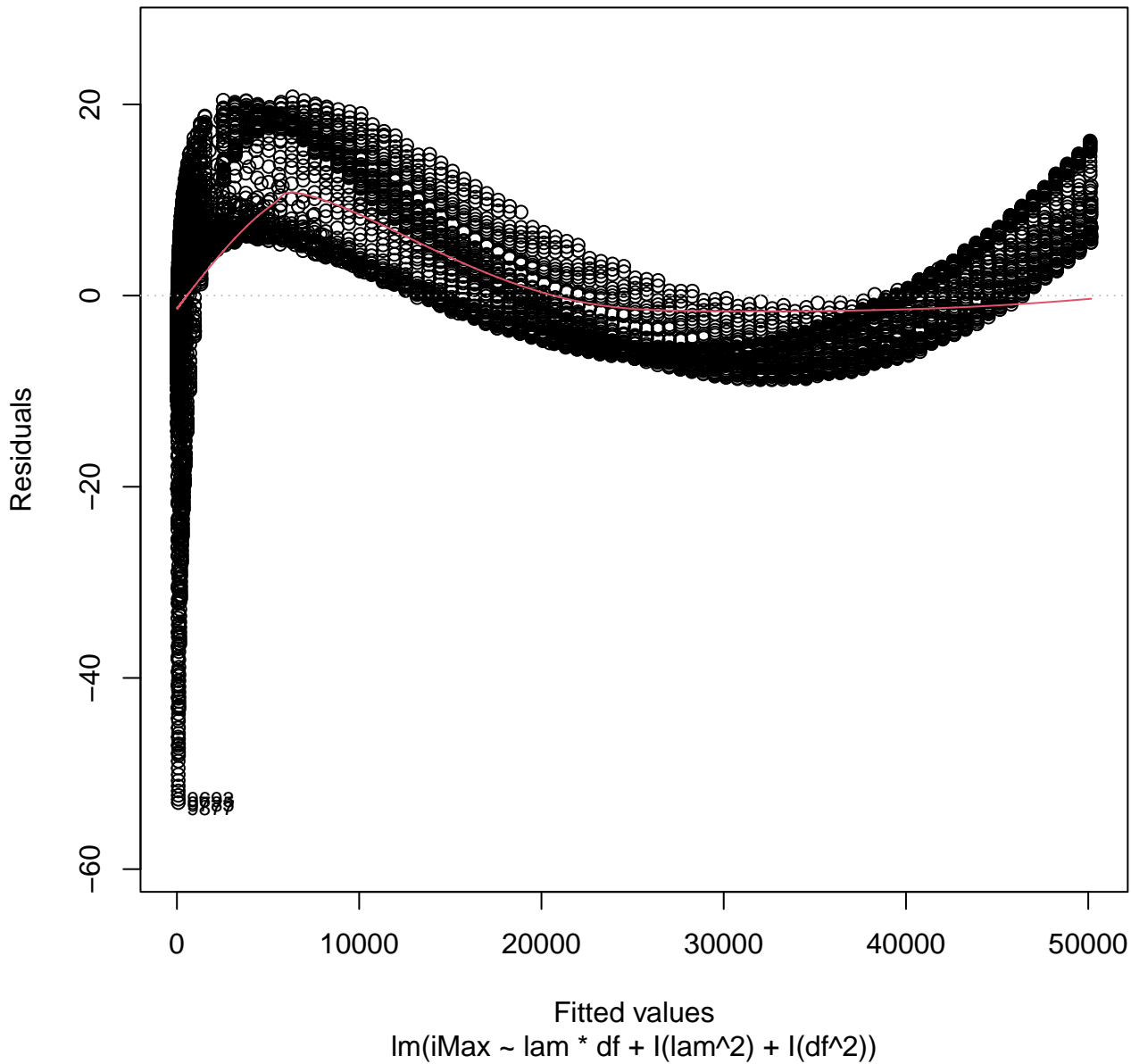
residuals(l.10)



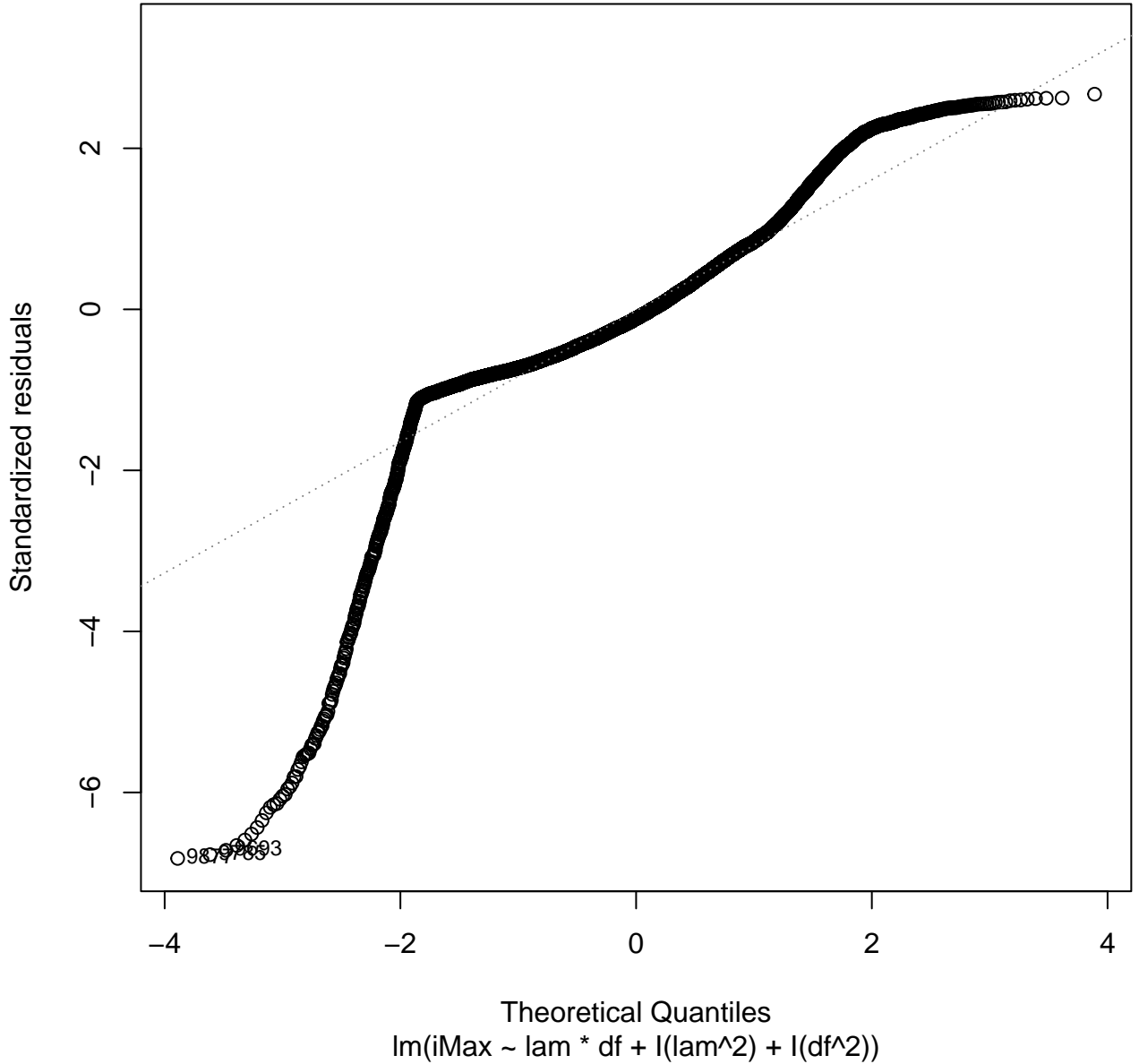
residuals(l.6)



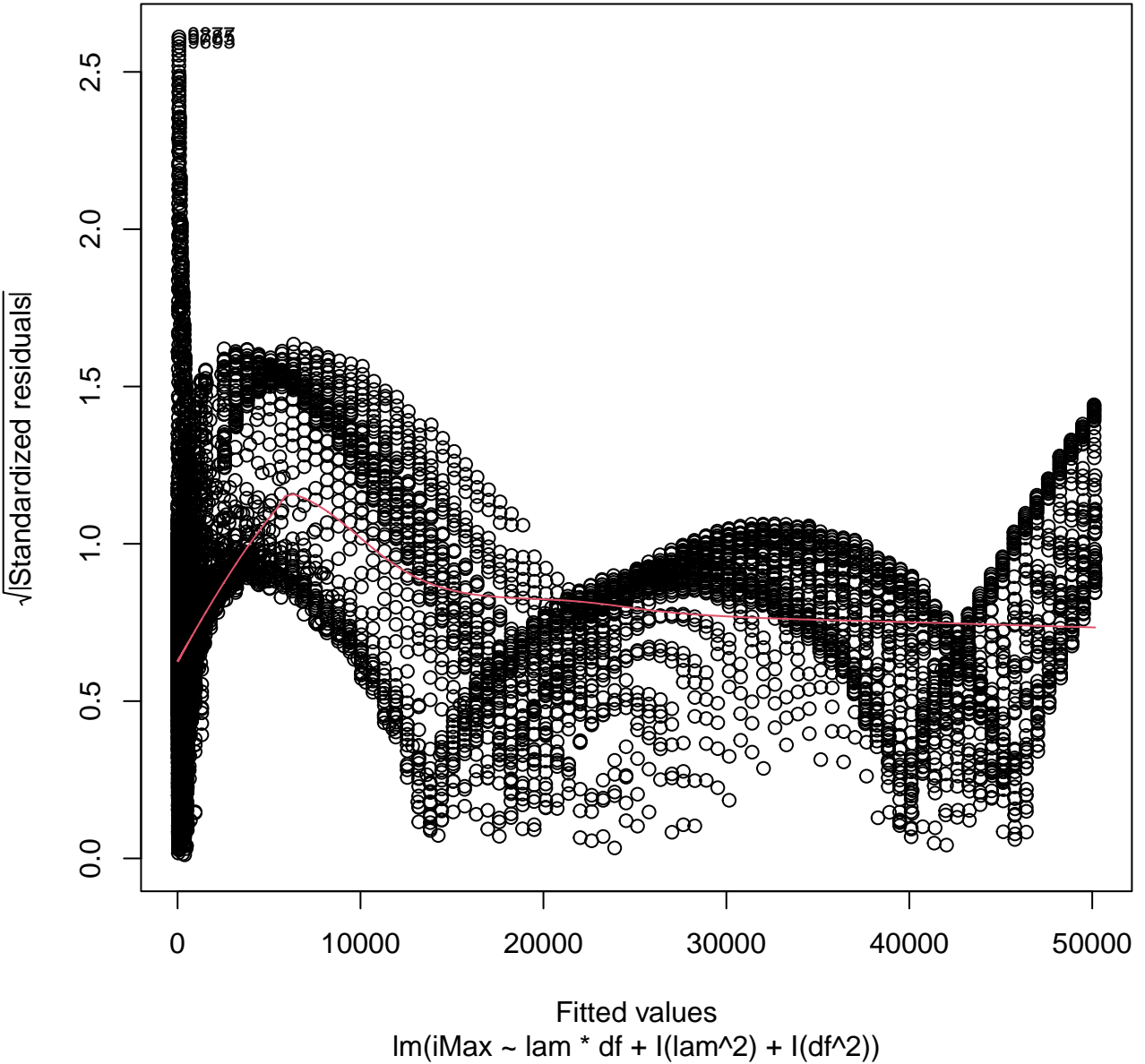
Residuals vs Fitted



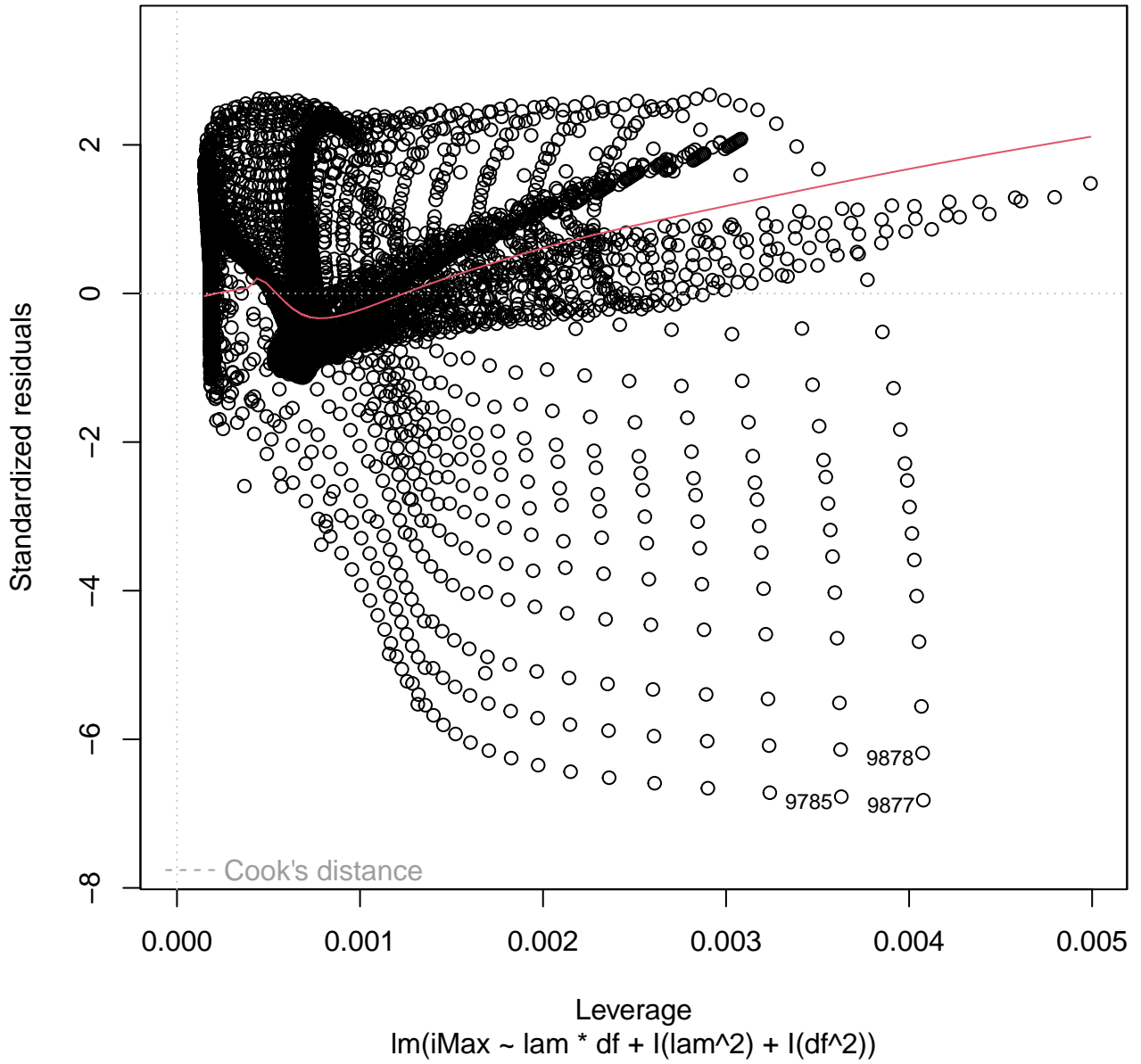
Q-Q Residuals

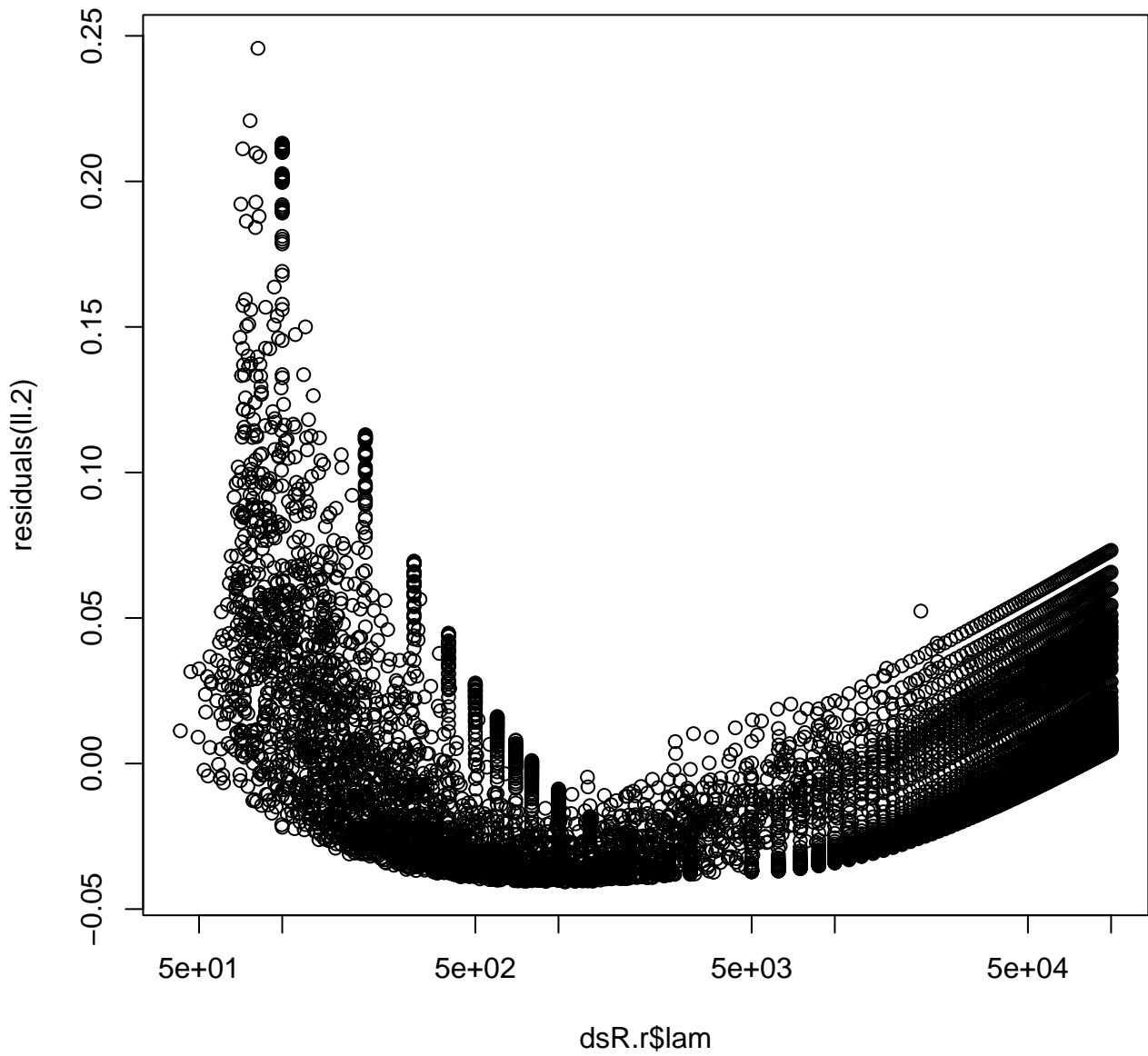


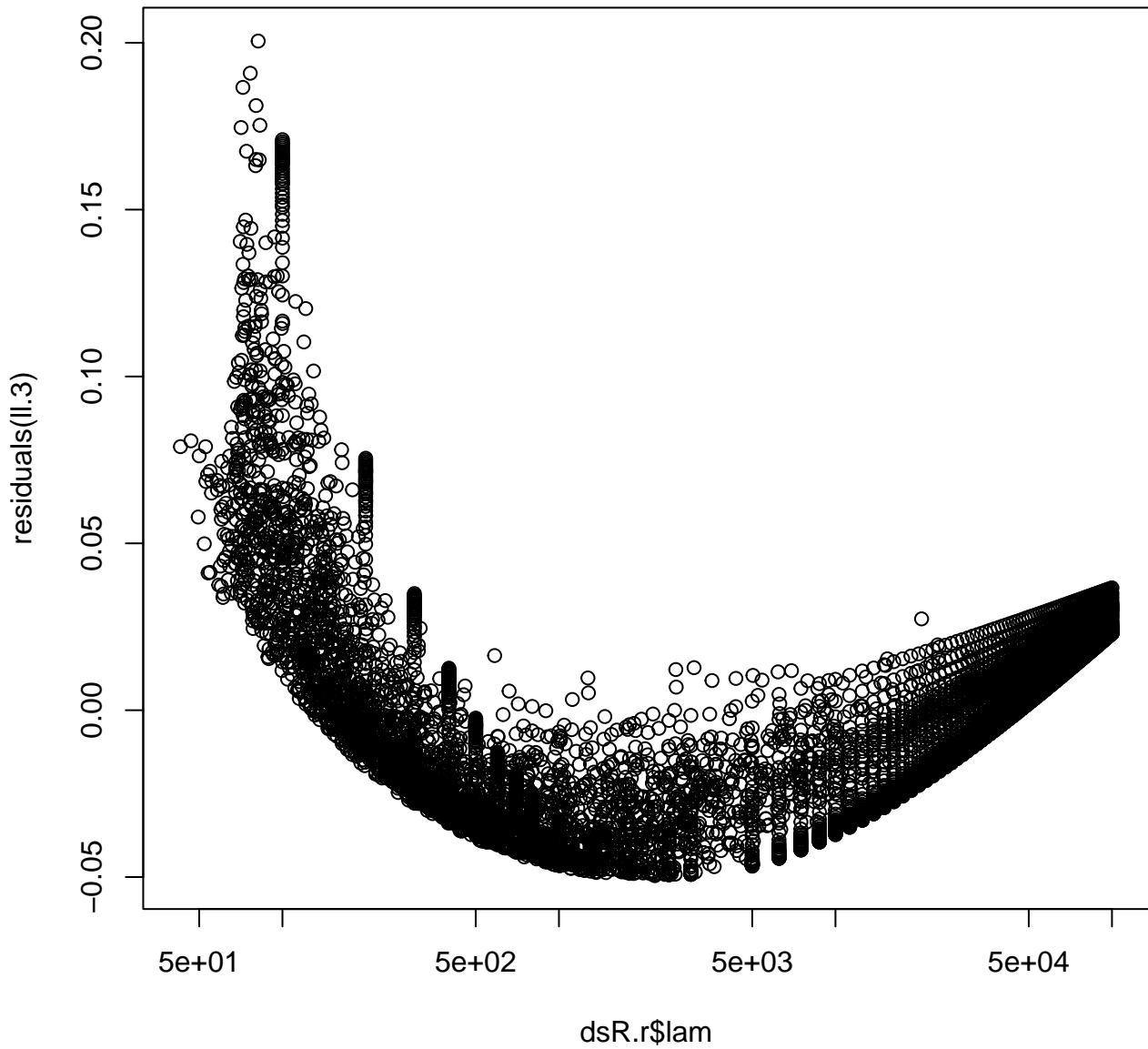
Scale-Location

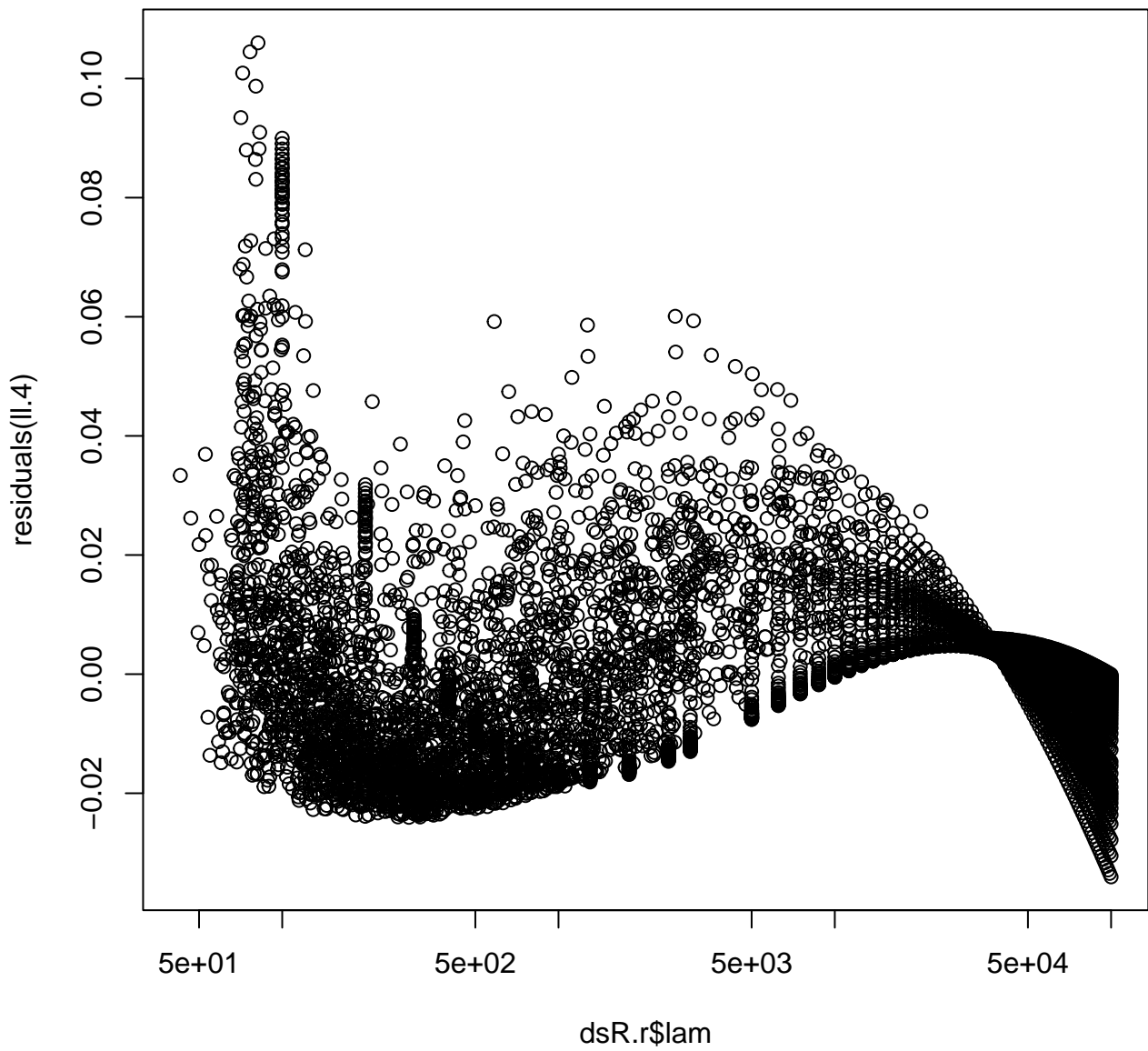


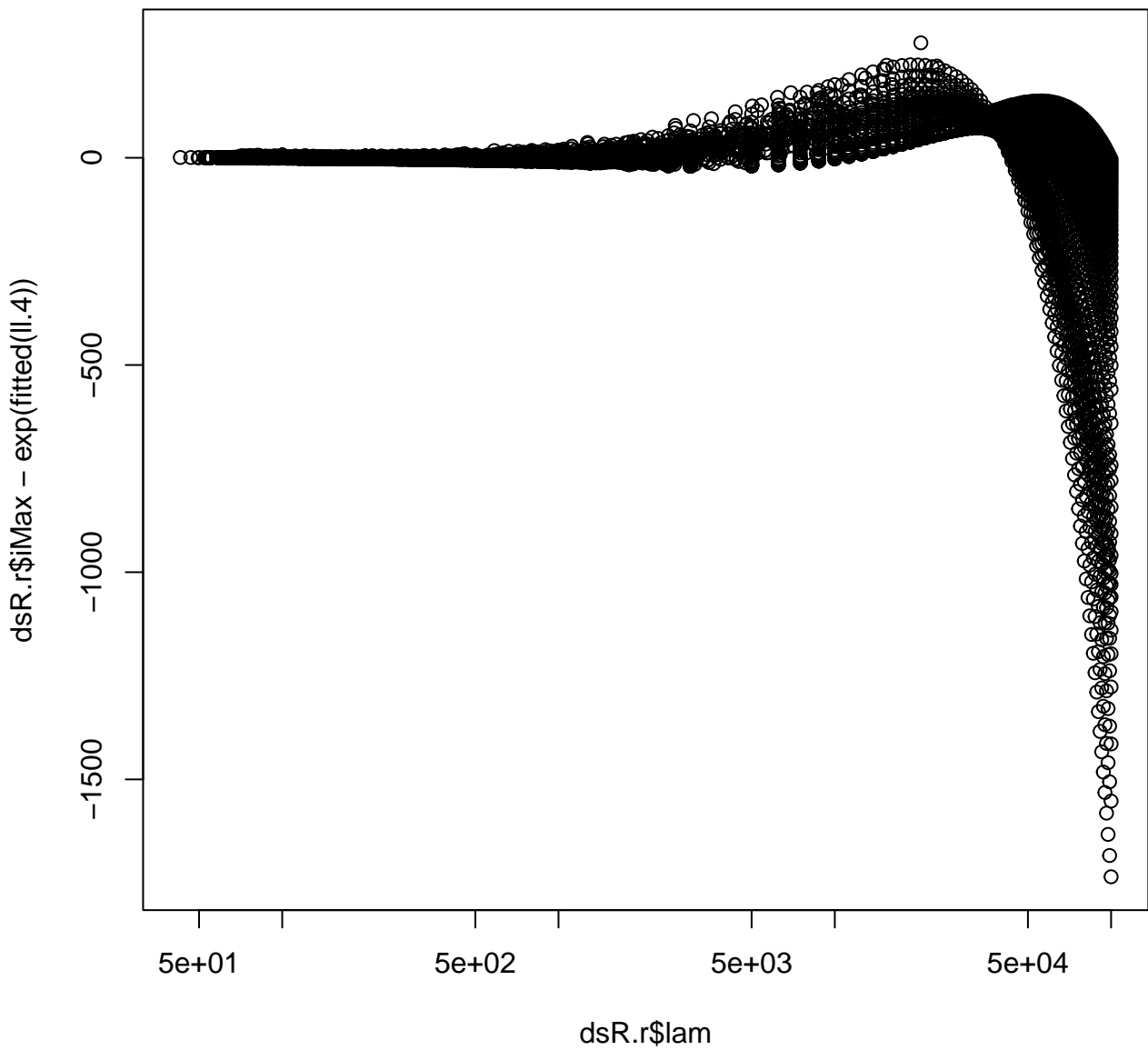
Residuals vs Leverage



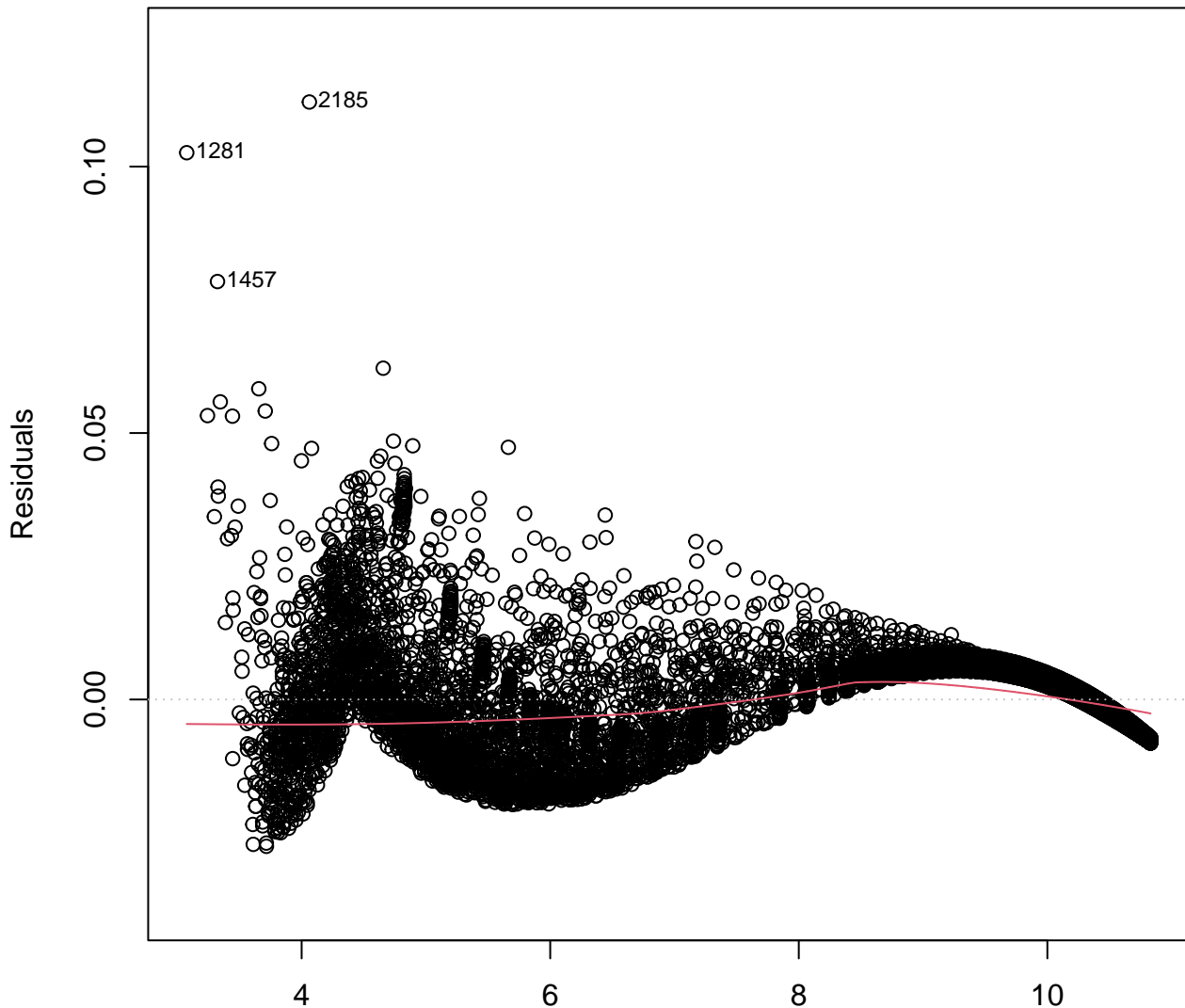






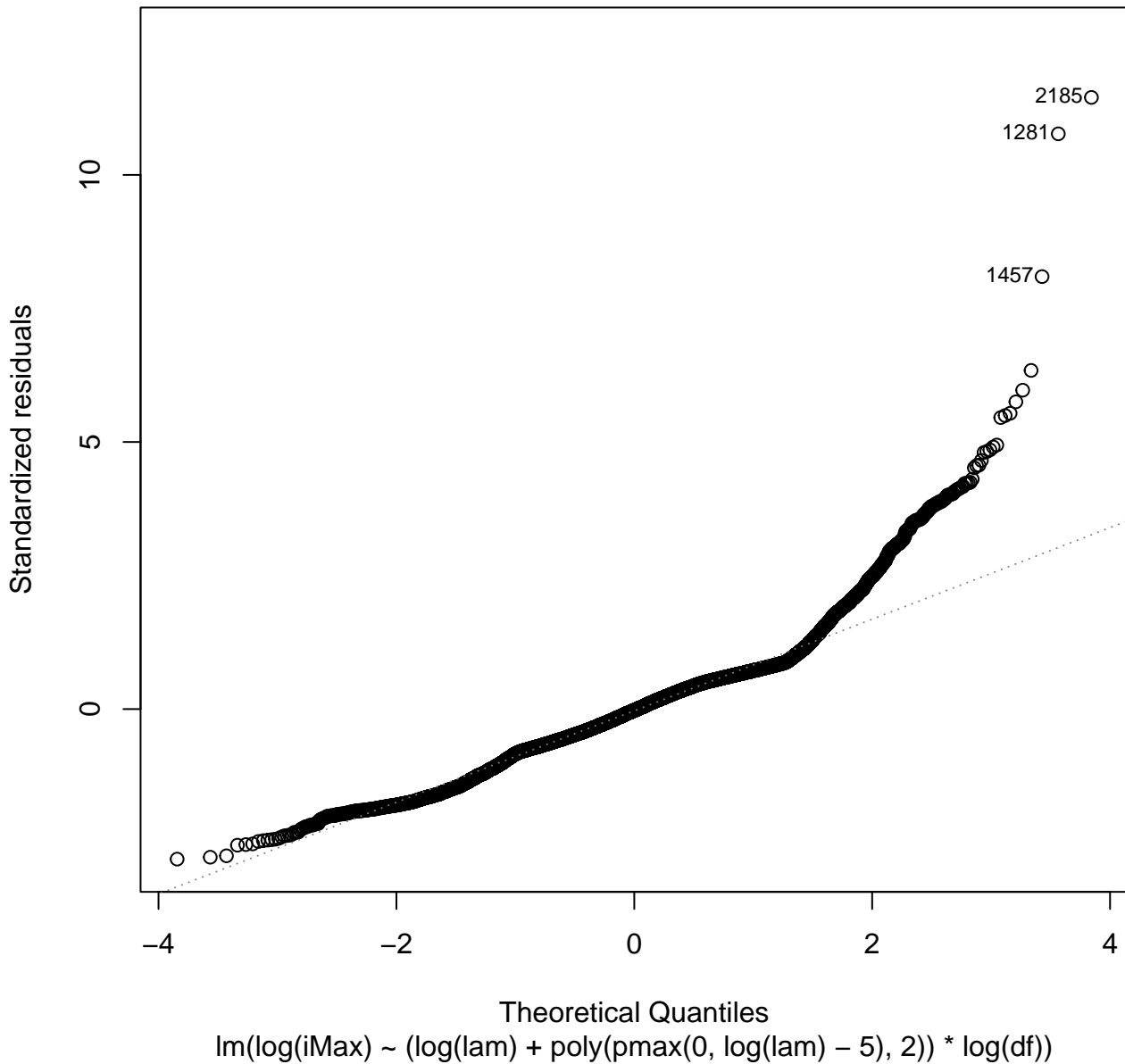


Residuals vs Fitted

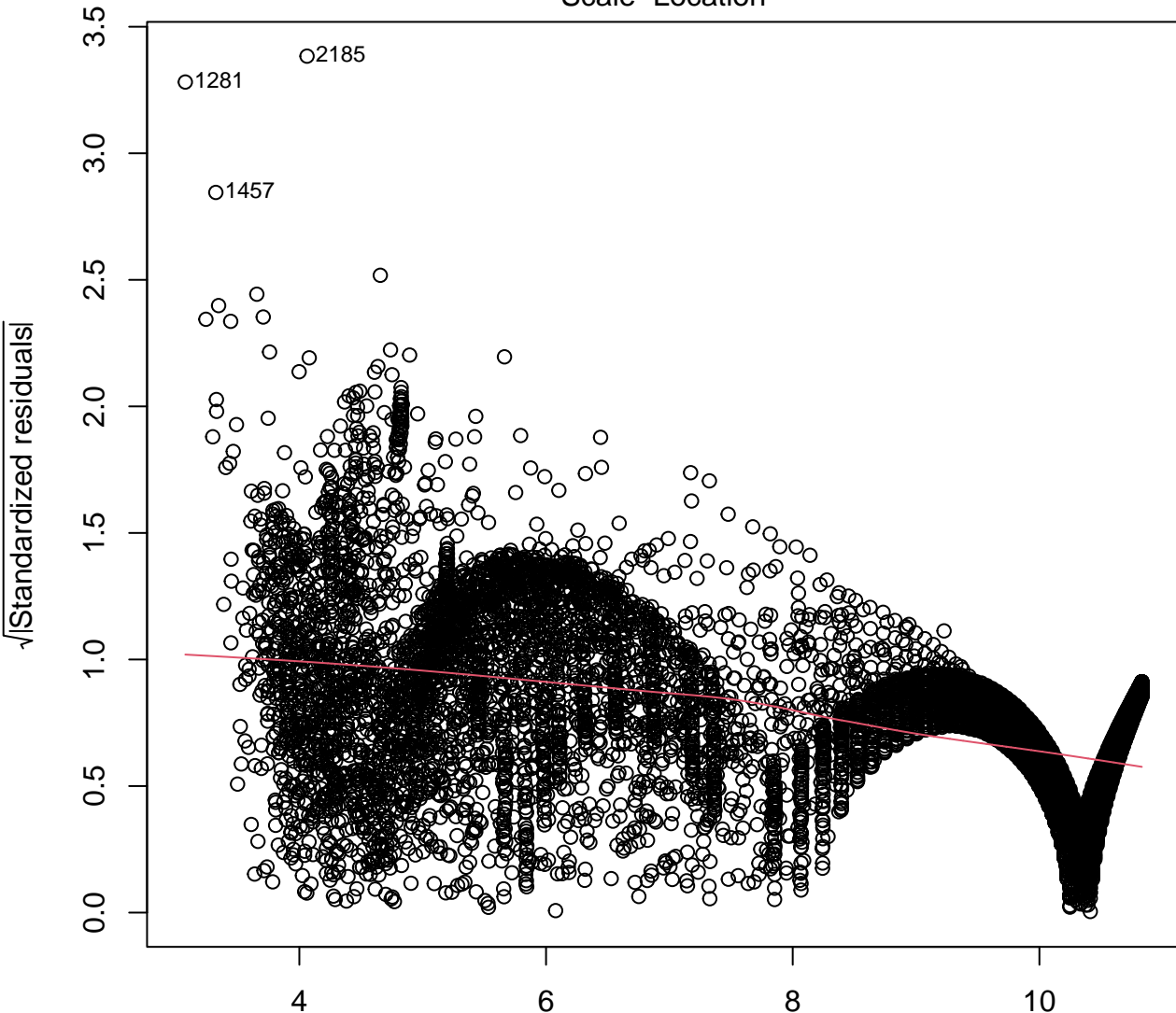


Fitted values
 $\text{lm}(\log(i\text{Max}) \sim (\log(\text{lam}) + \text{poly}(\text{pmax}(0, \log(\text{lam}) - 5), 2)) * \log(\text{df}))$

Q-Q Residuals



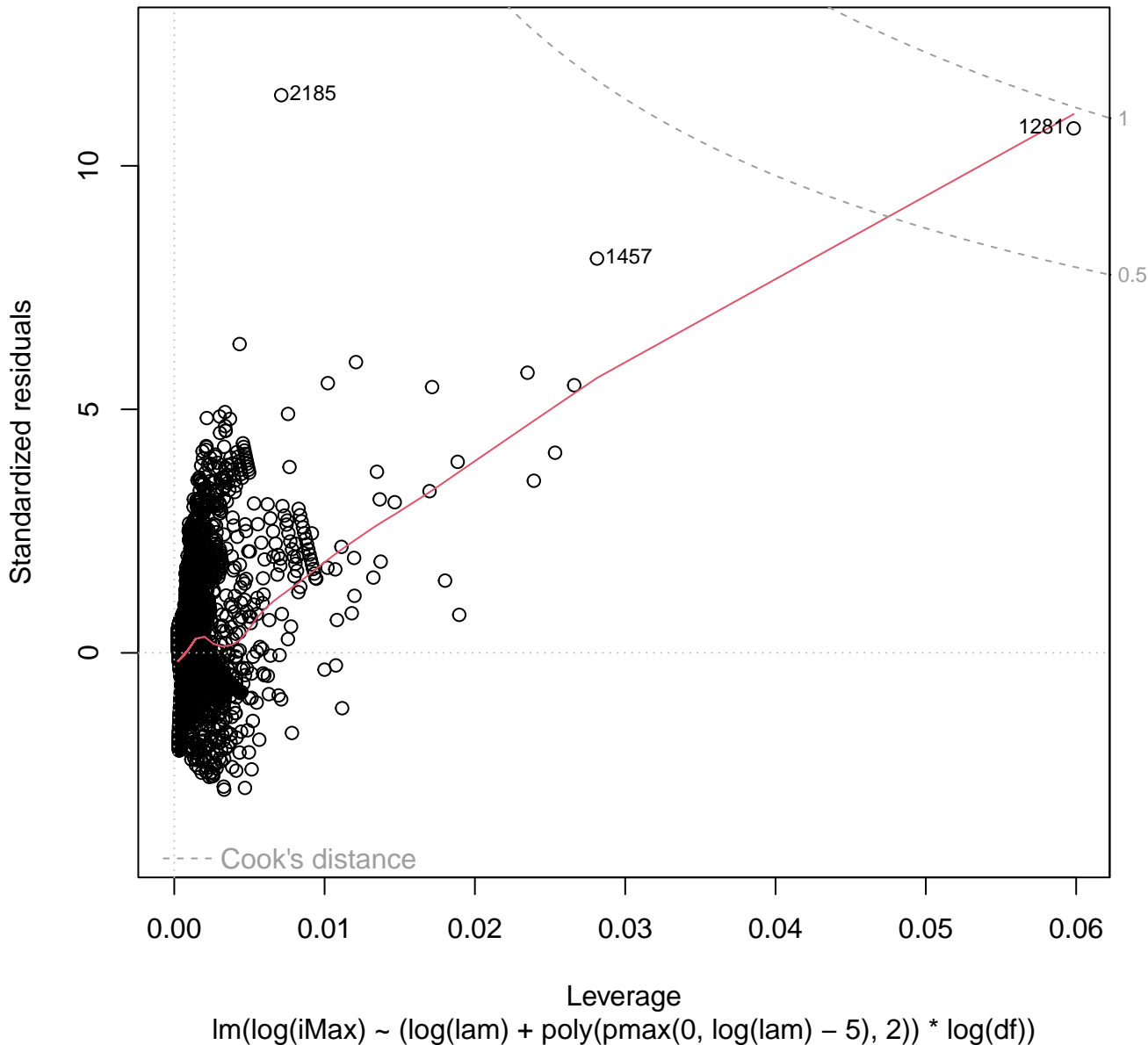
Scale-Location

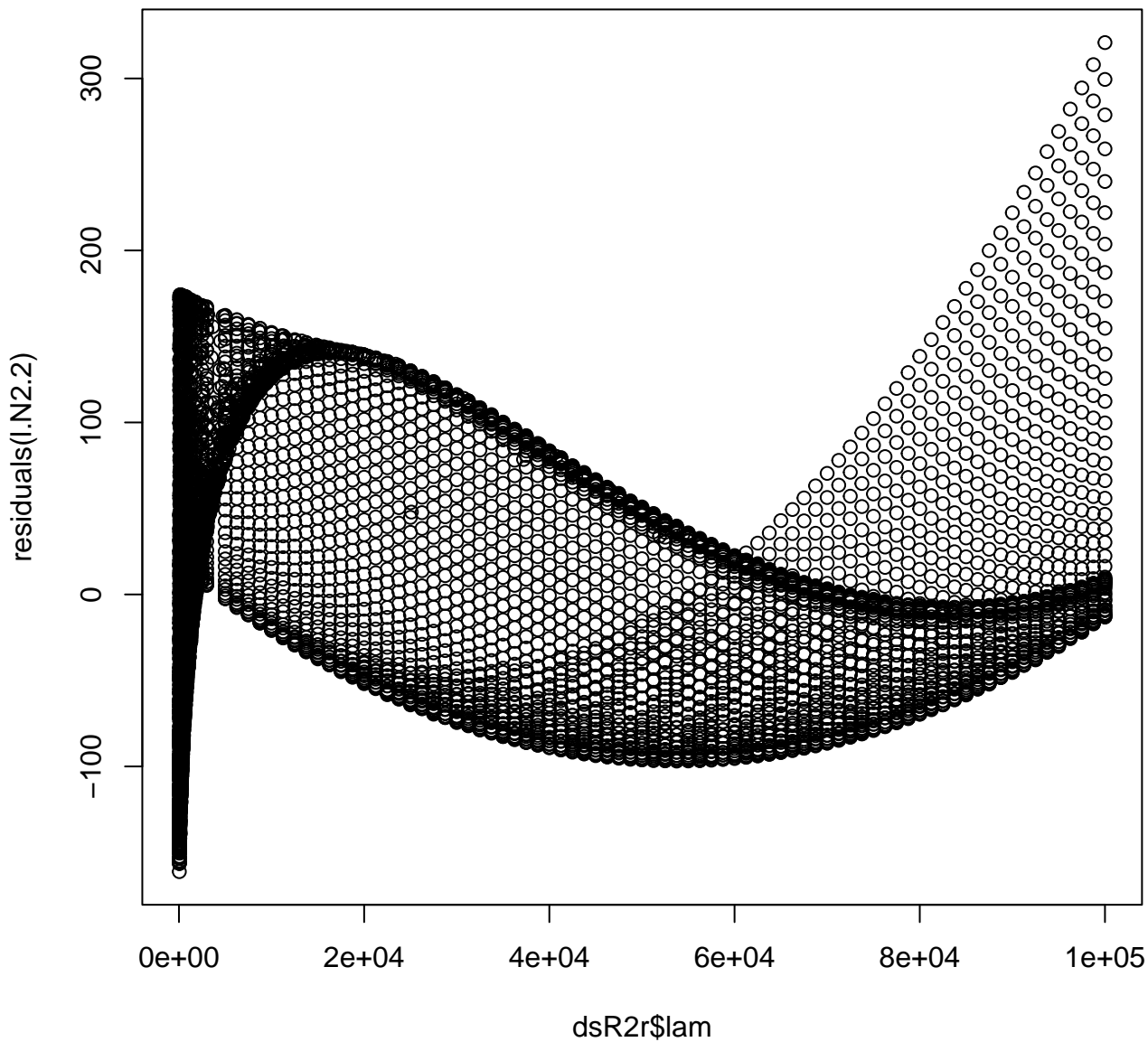


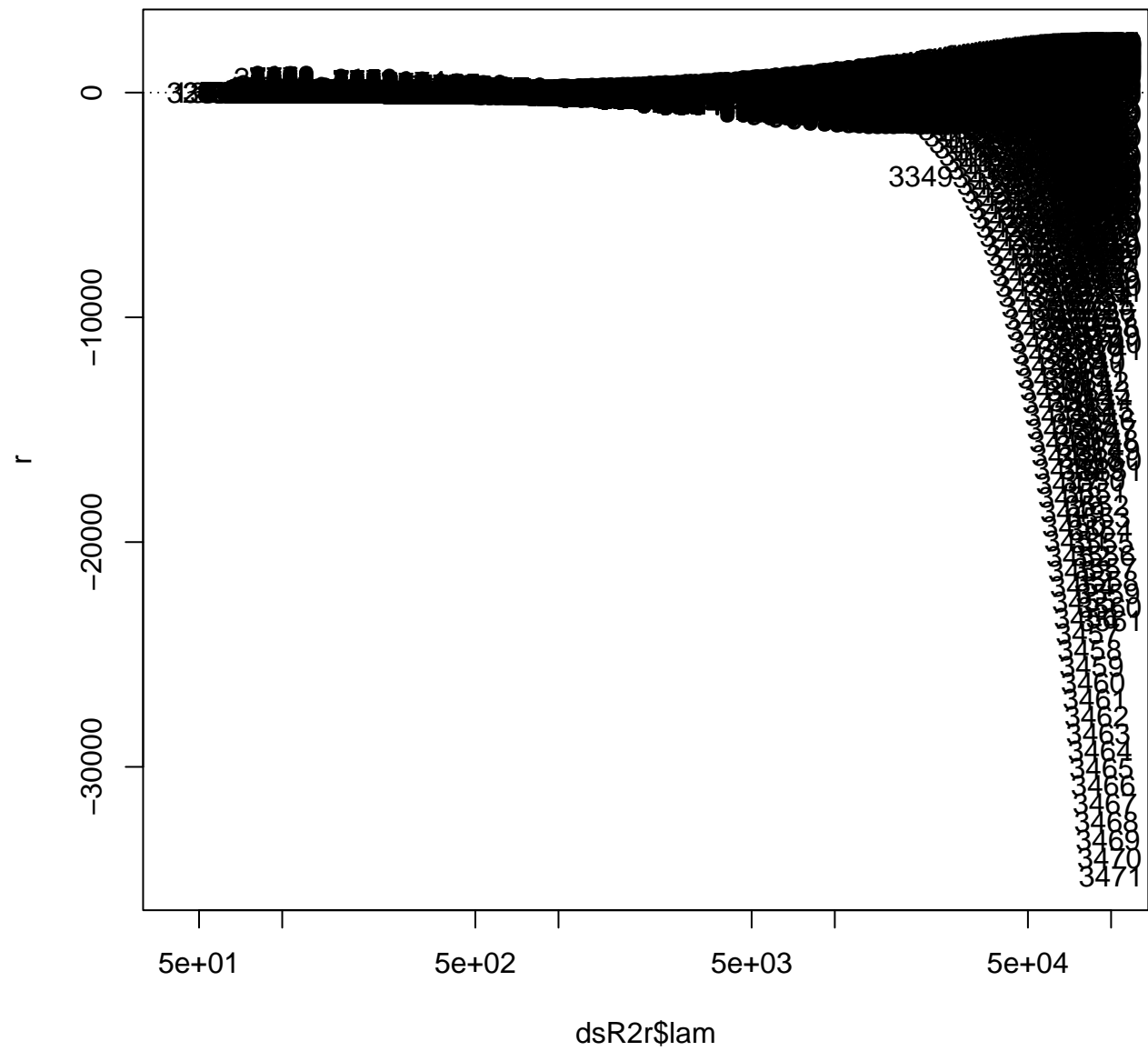
Fitted values

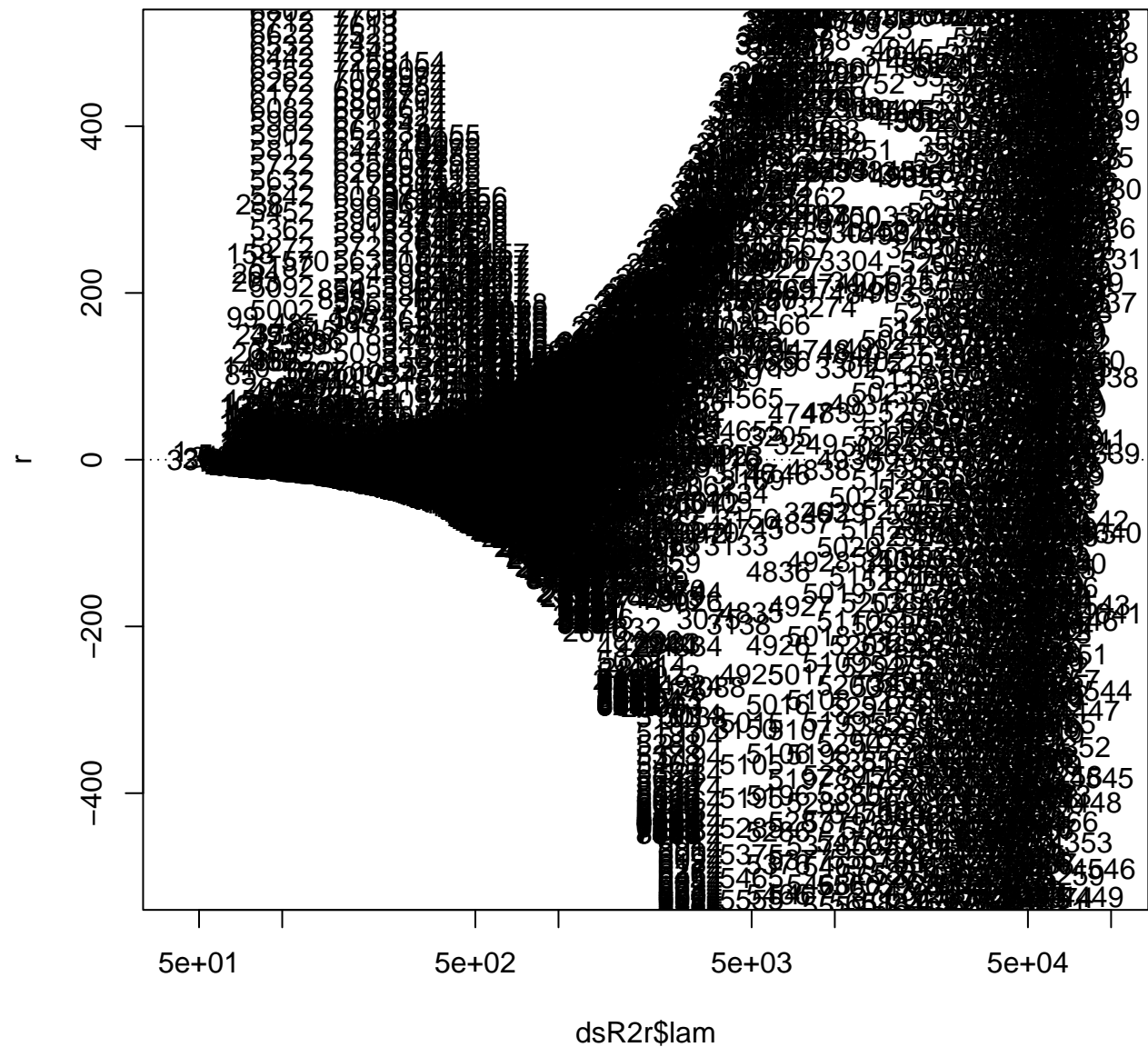
$\text{lm}(\log(\text{iMax}) \sim (\log(\text{lam}) + \text{poly}(\text{pmax}(0, \log(\text{lam}) - 5), 2)) * \log(\text{df}))$

Residuals vs Leverage

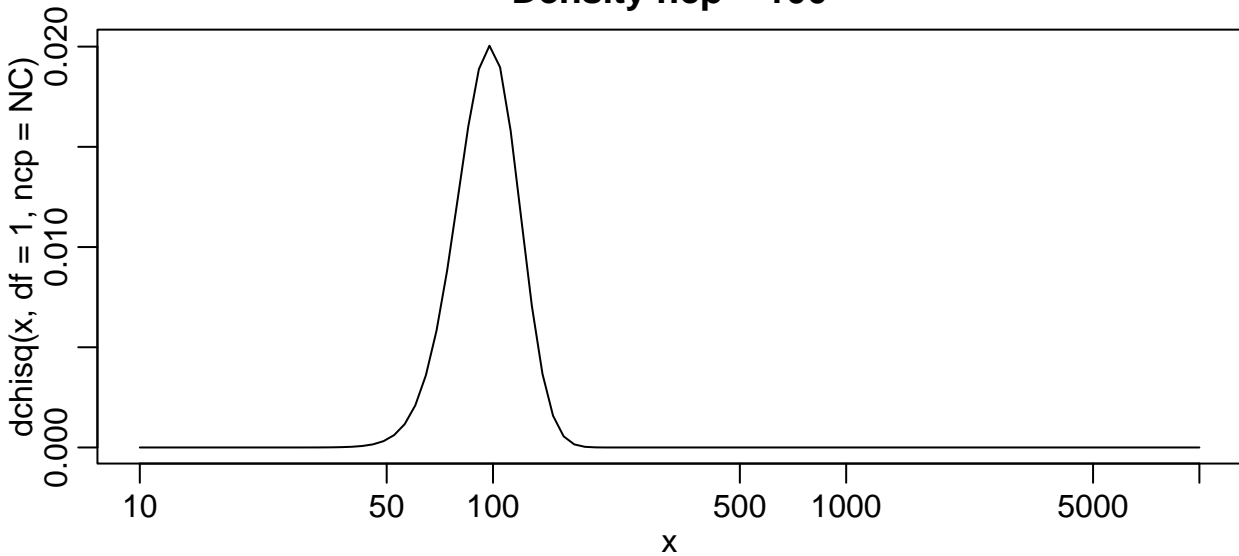




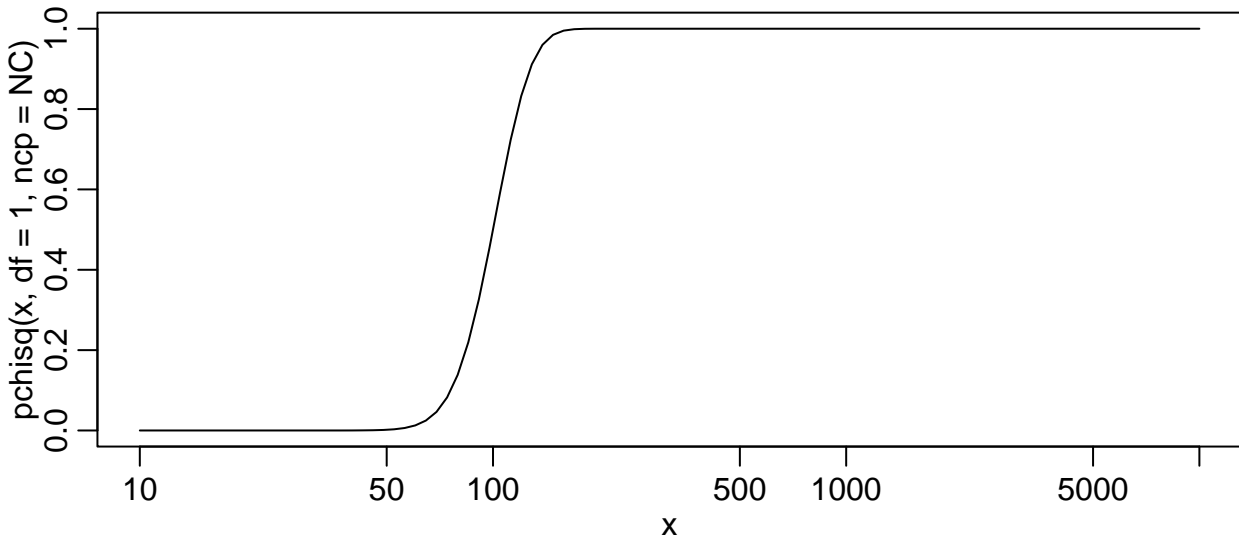




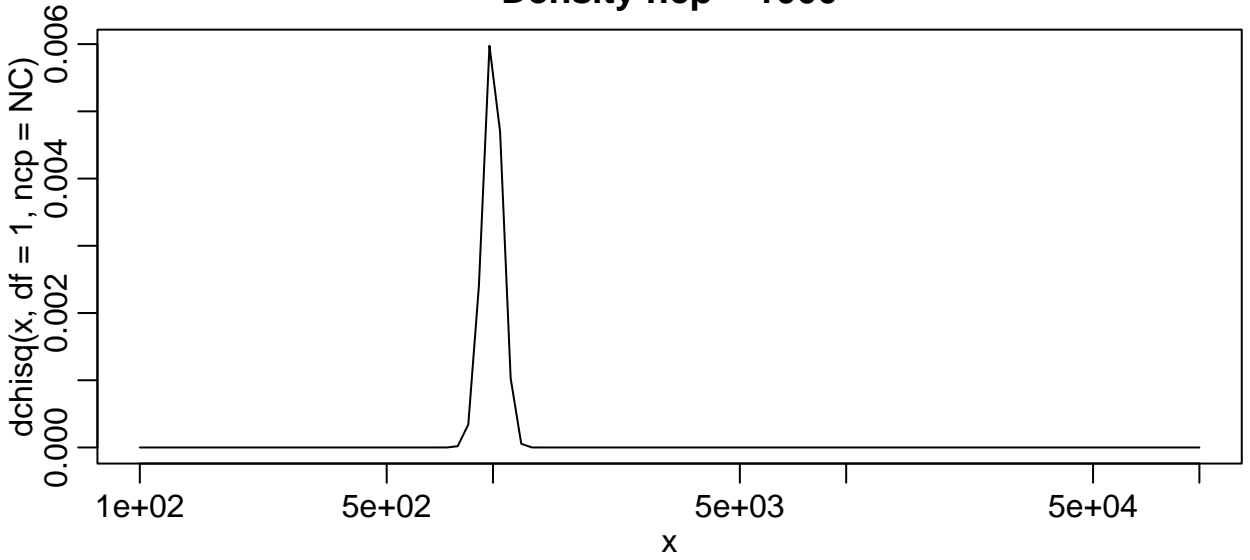
Density ncp = 100



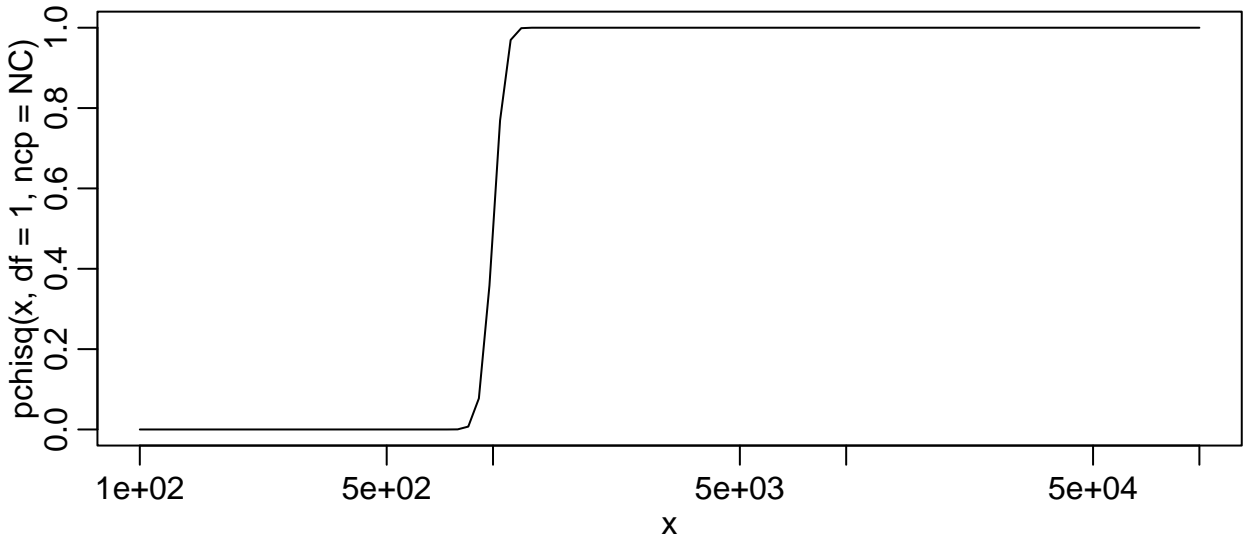
CDF ncp = 100



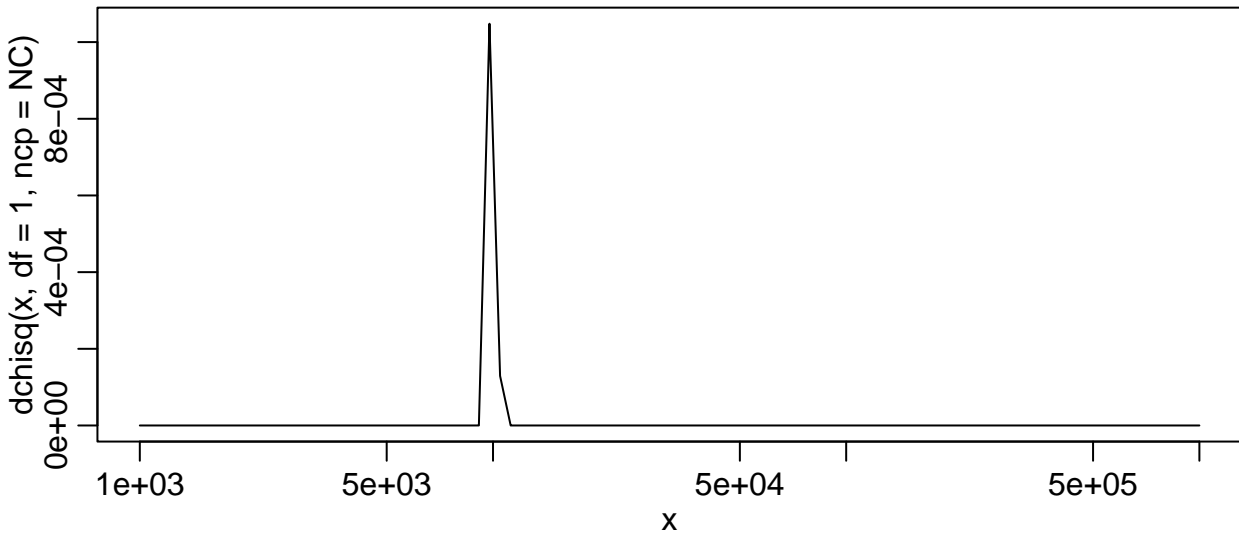
Density ncp = 1000



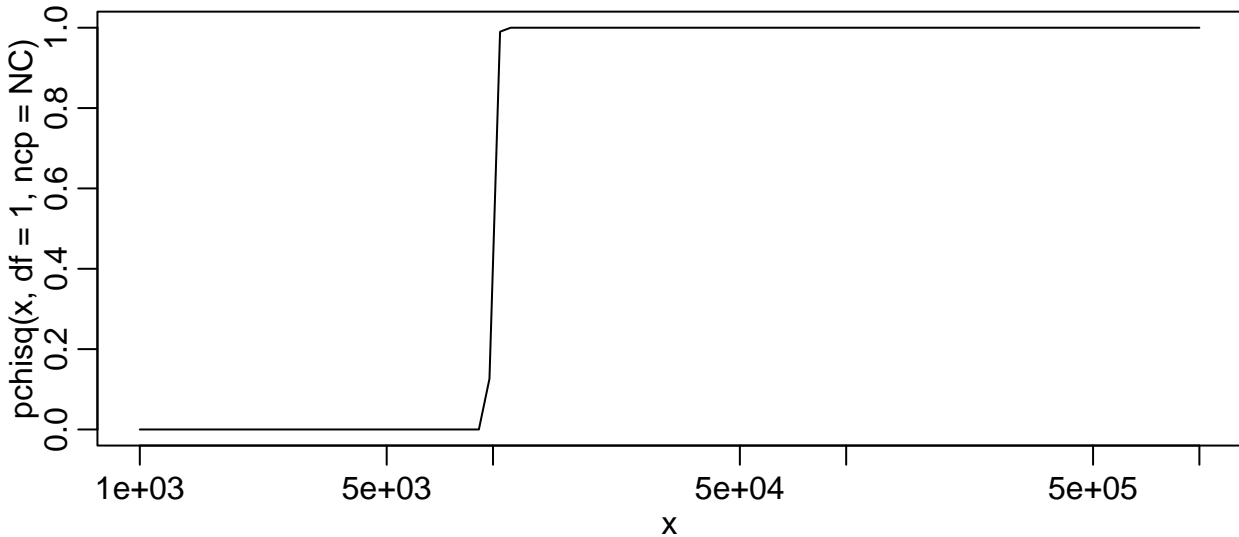
CDF ncp = 1000



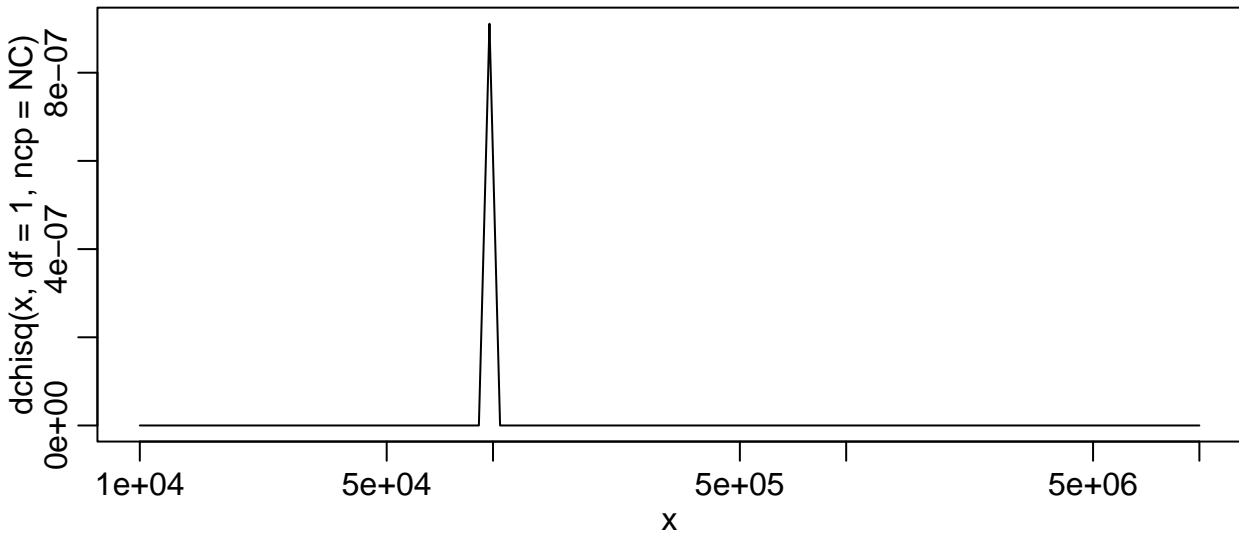
Density ncp = 10000



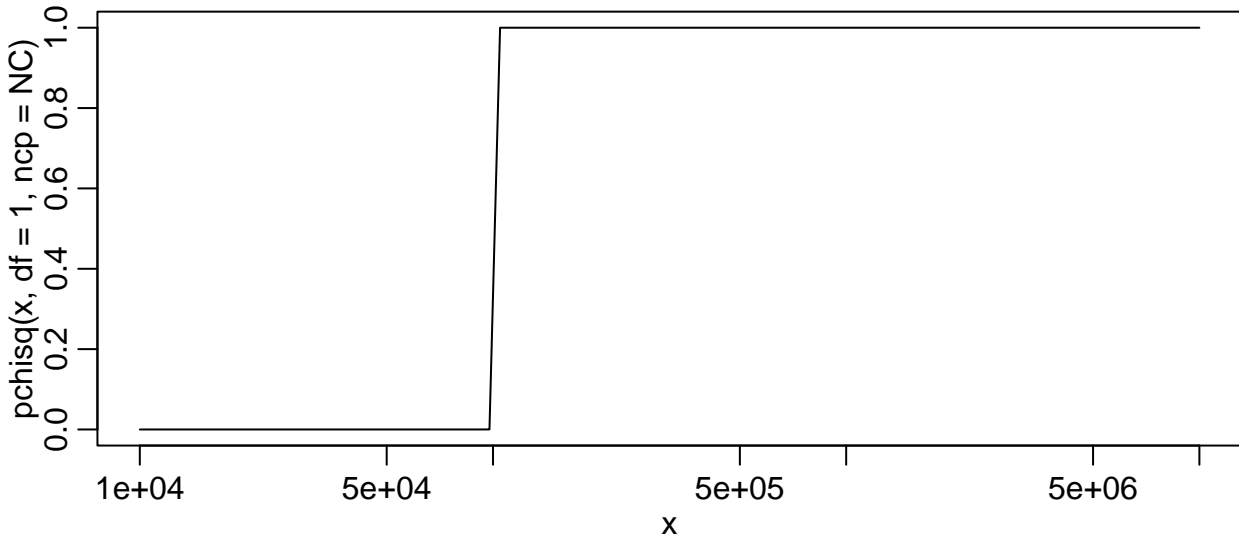
CDF ncp = 10000



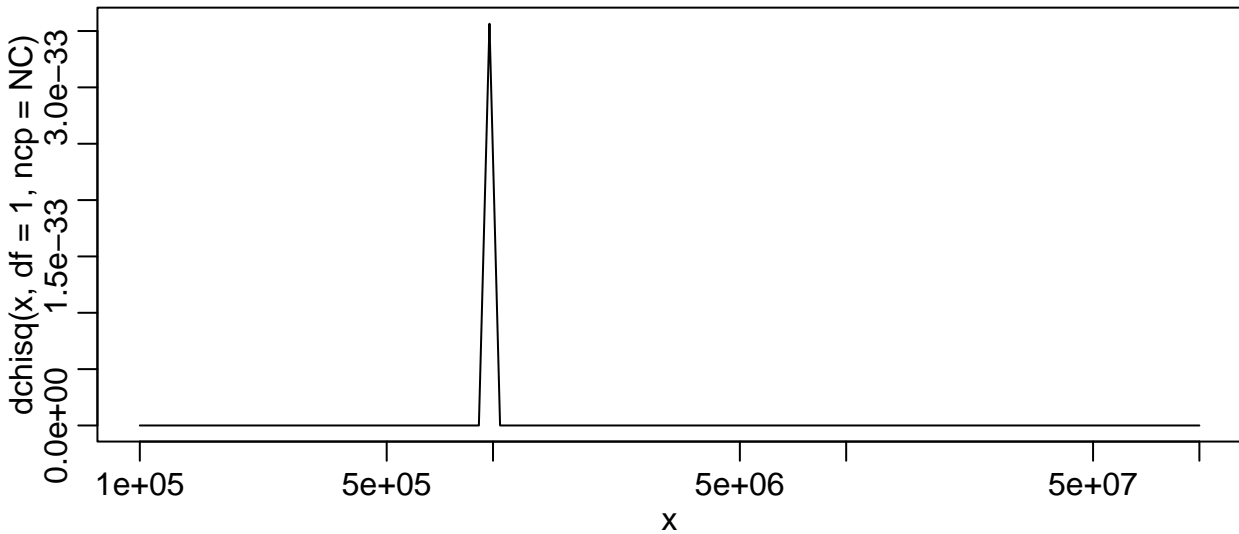
Density ncp = 1e+05



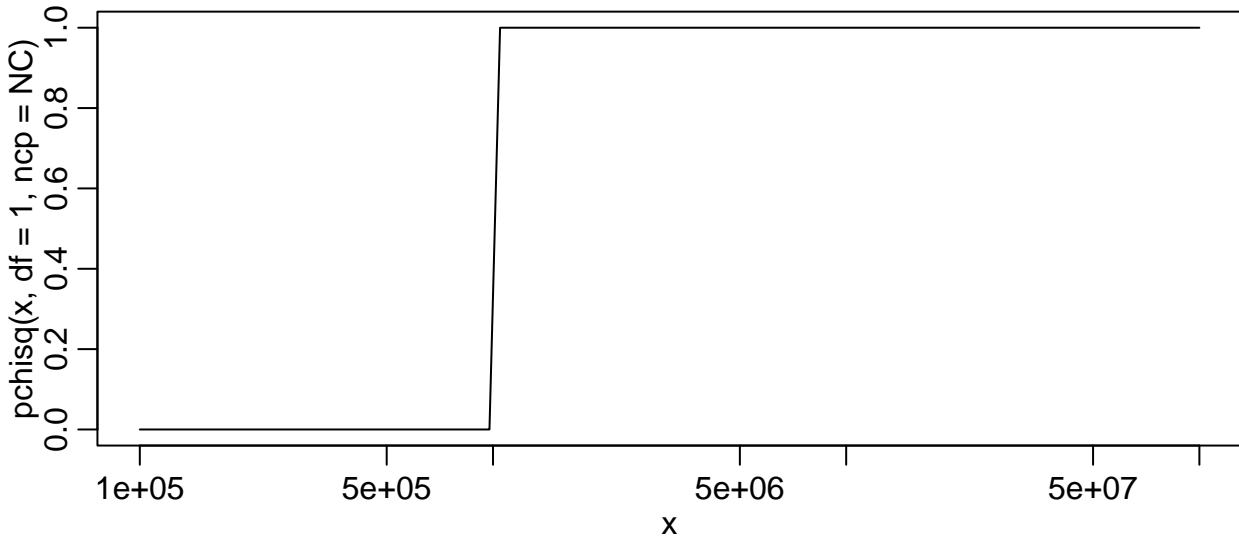
CDF ncp = 1e+05

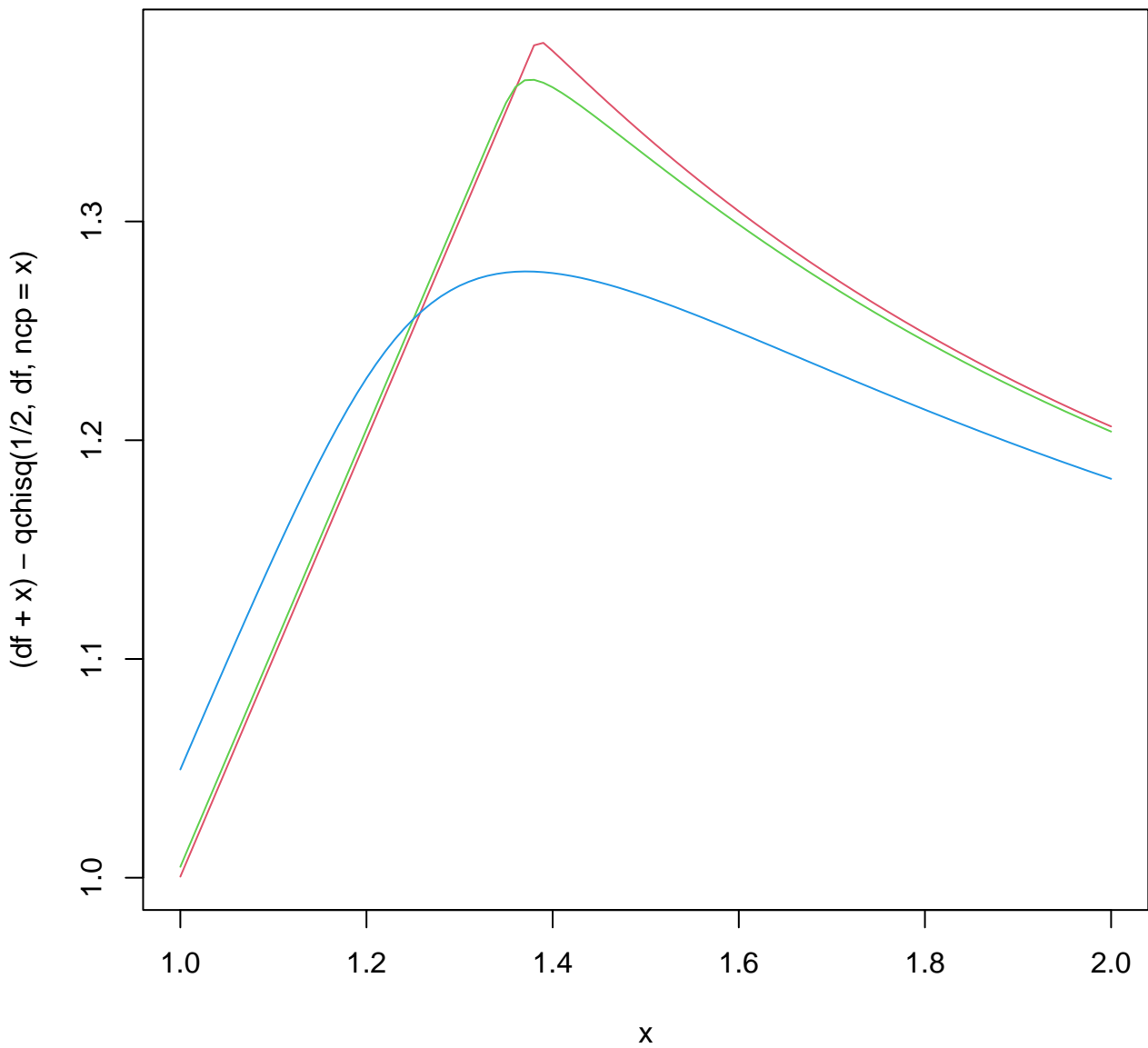


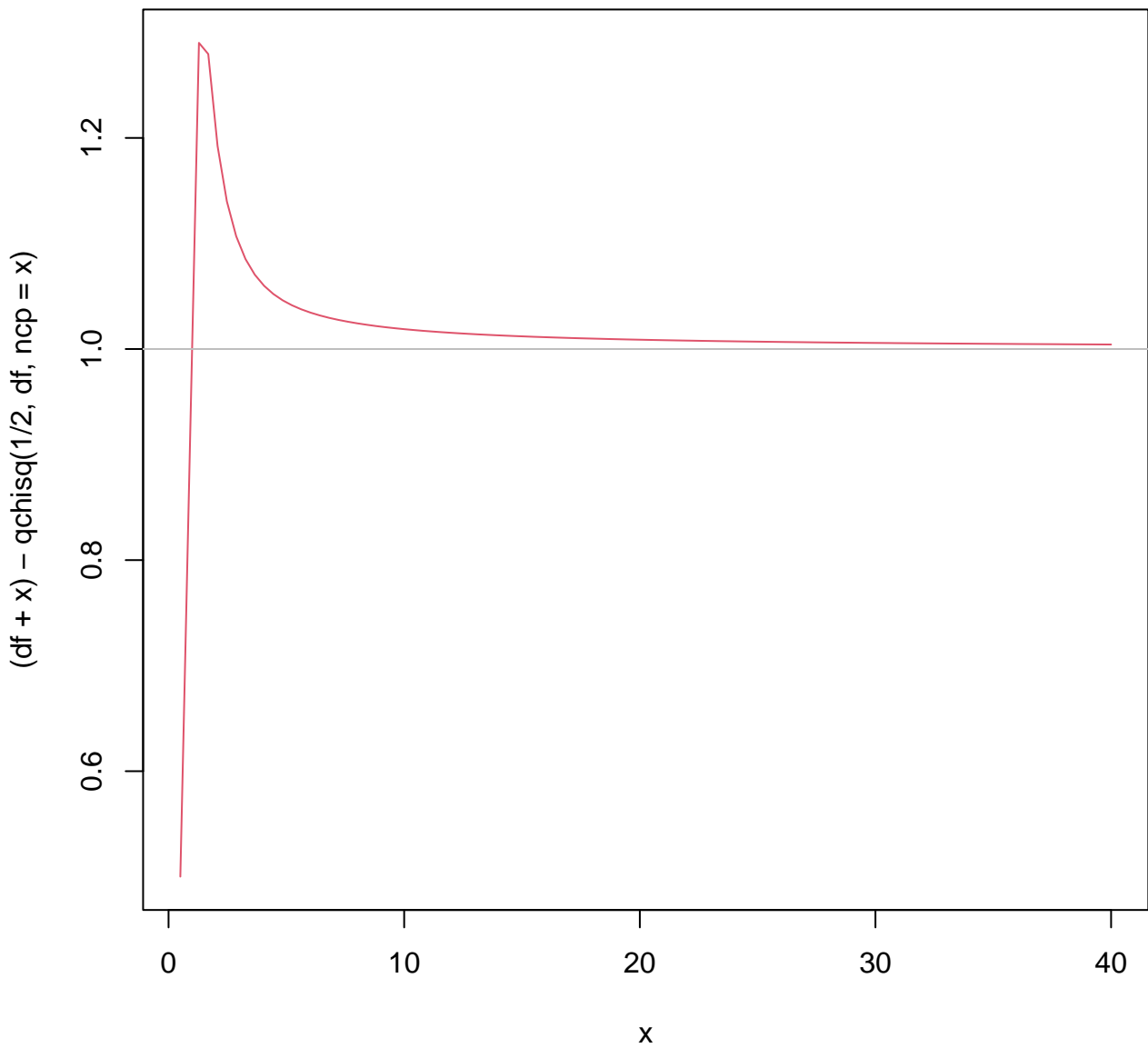
Density ncp = 1e+06

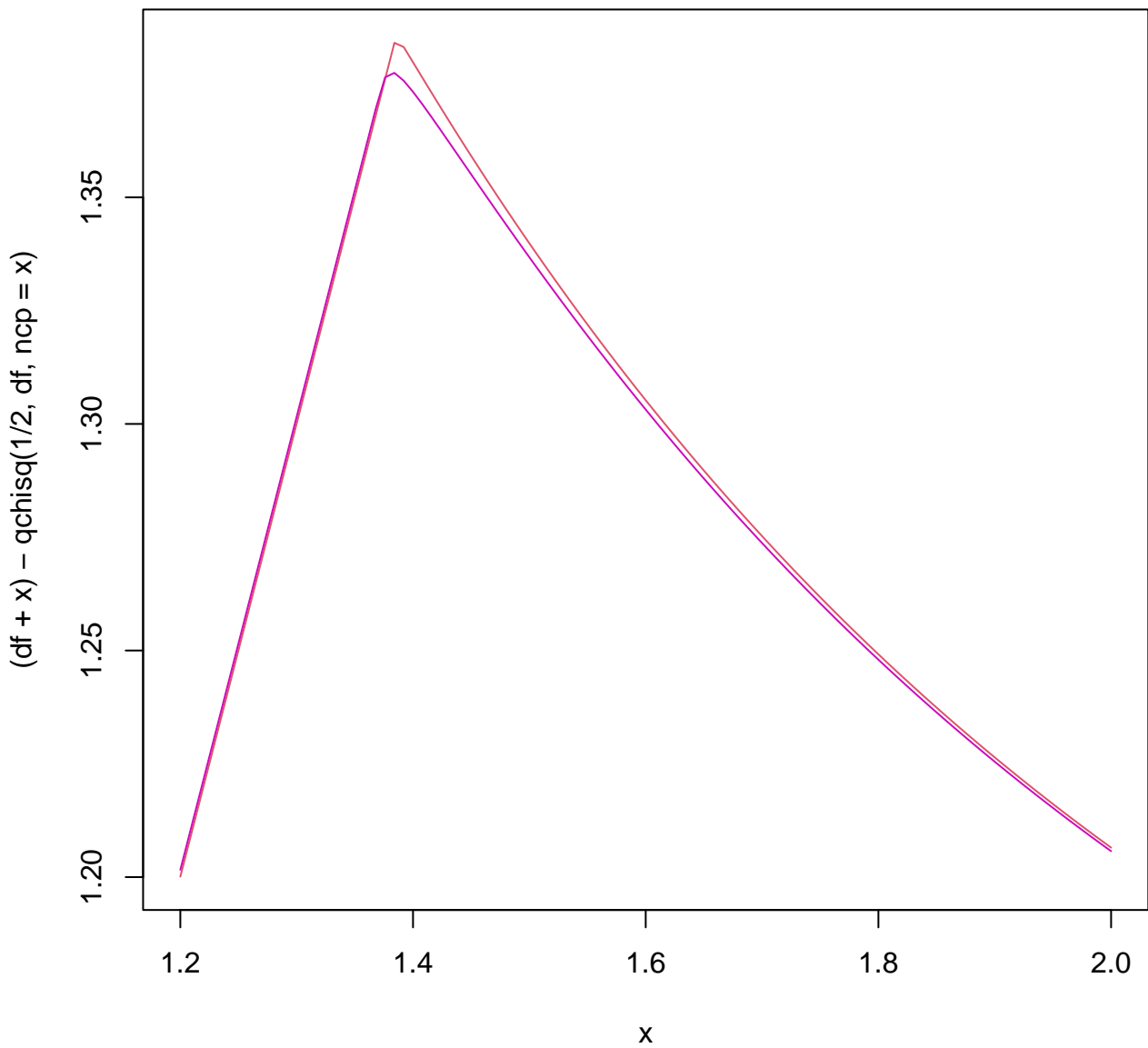


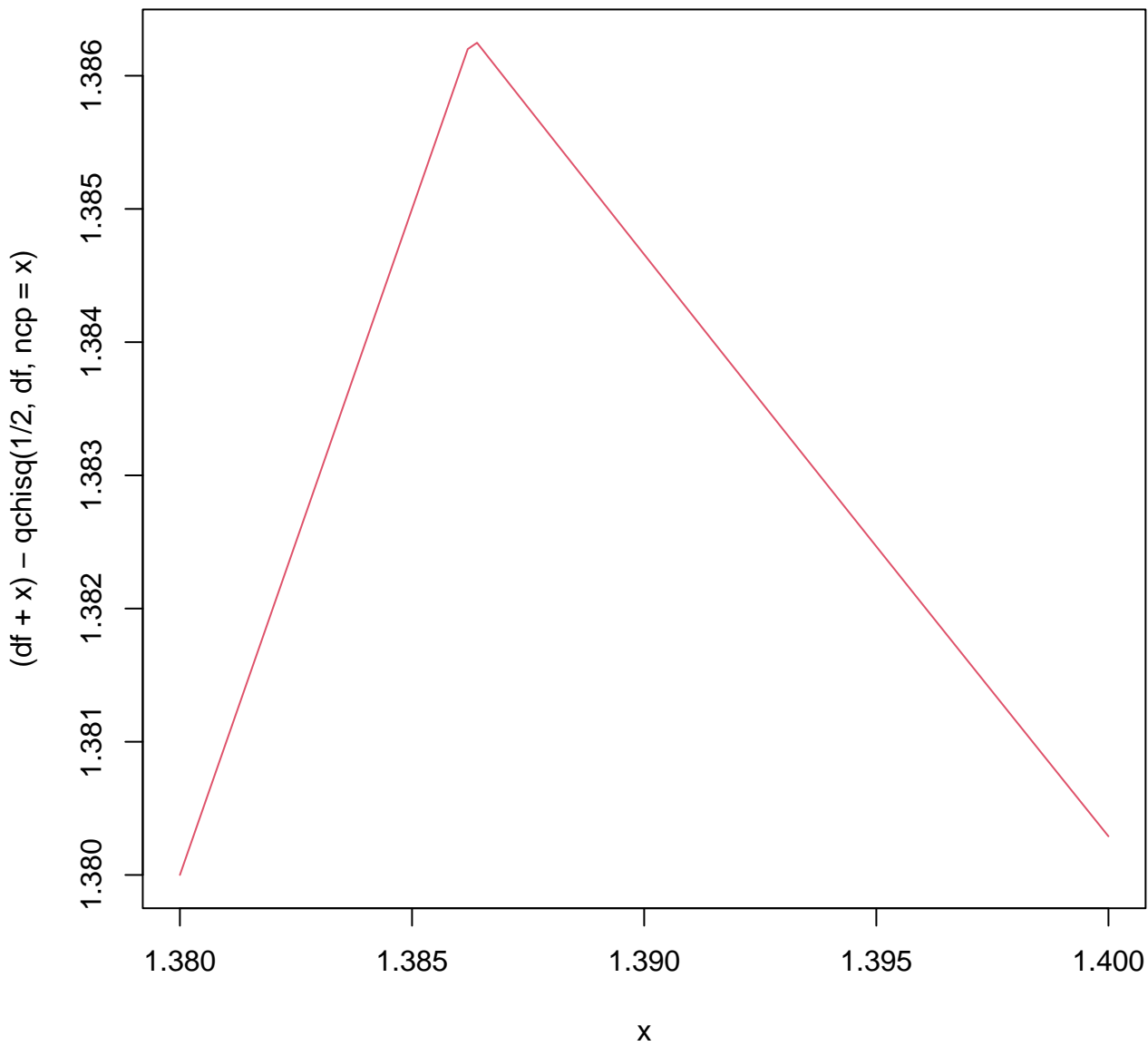
CDF ncp = 1e+06

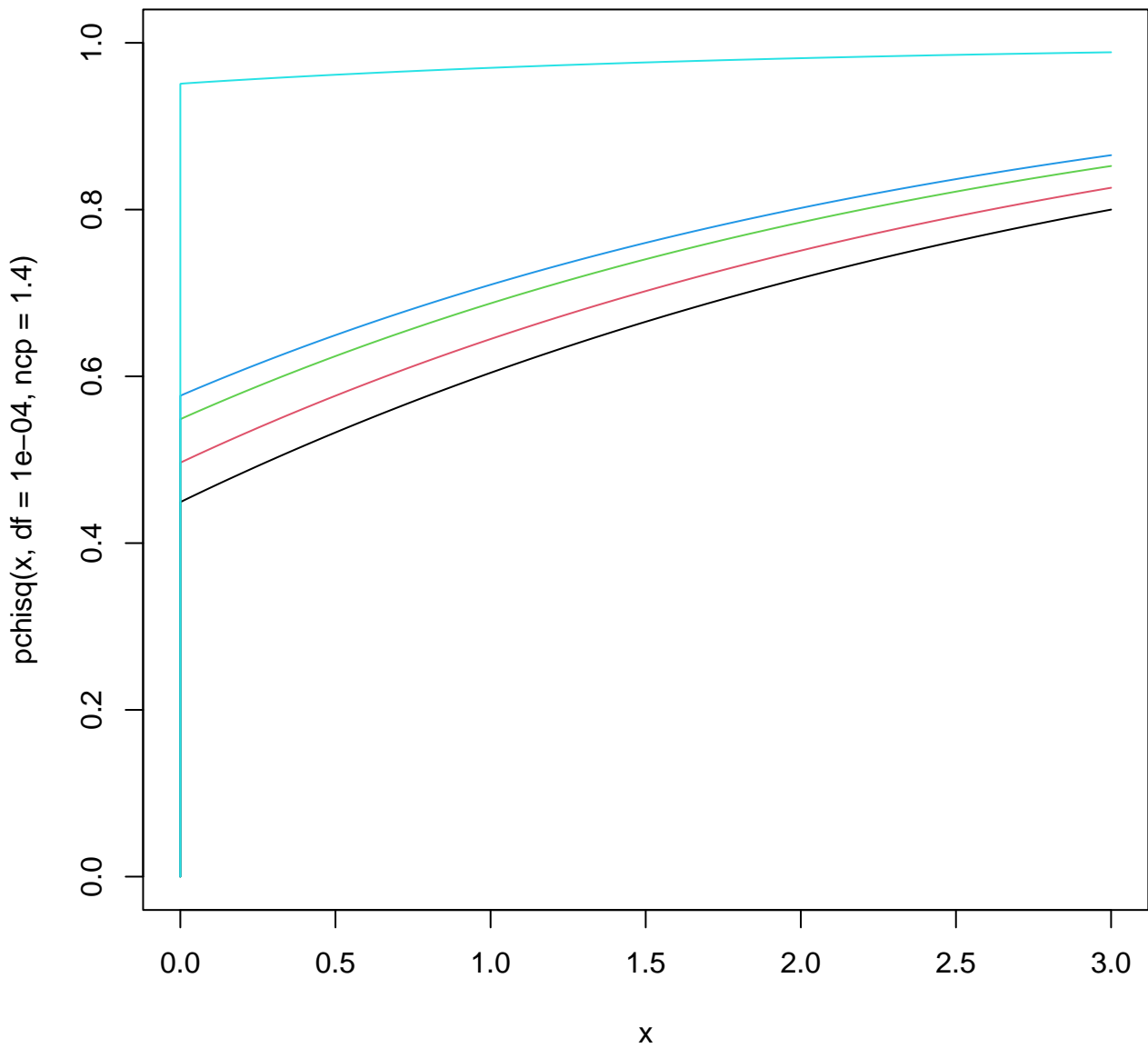


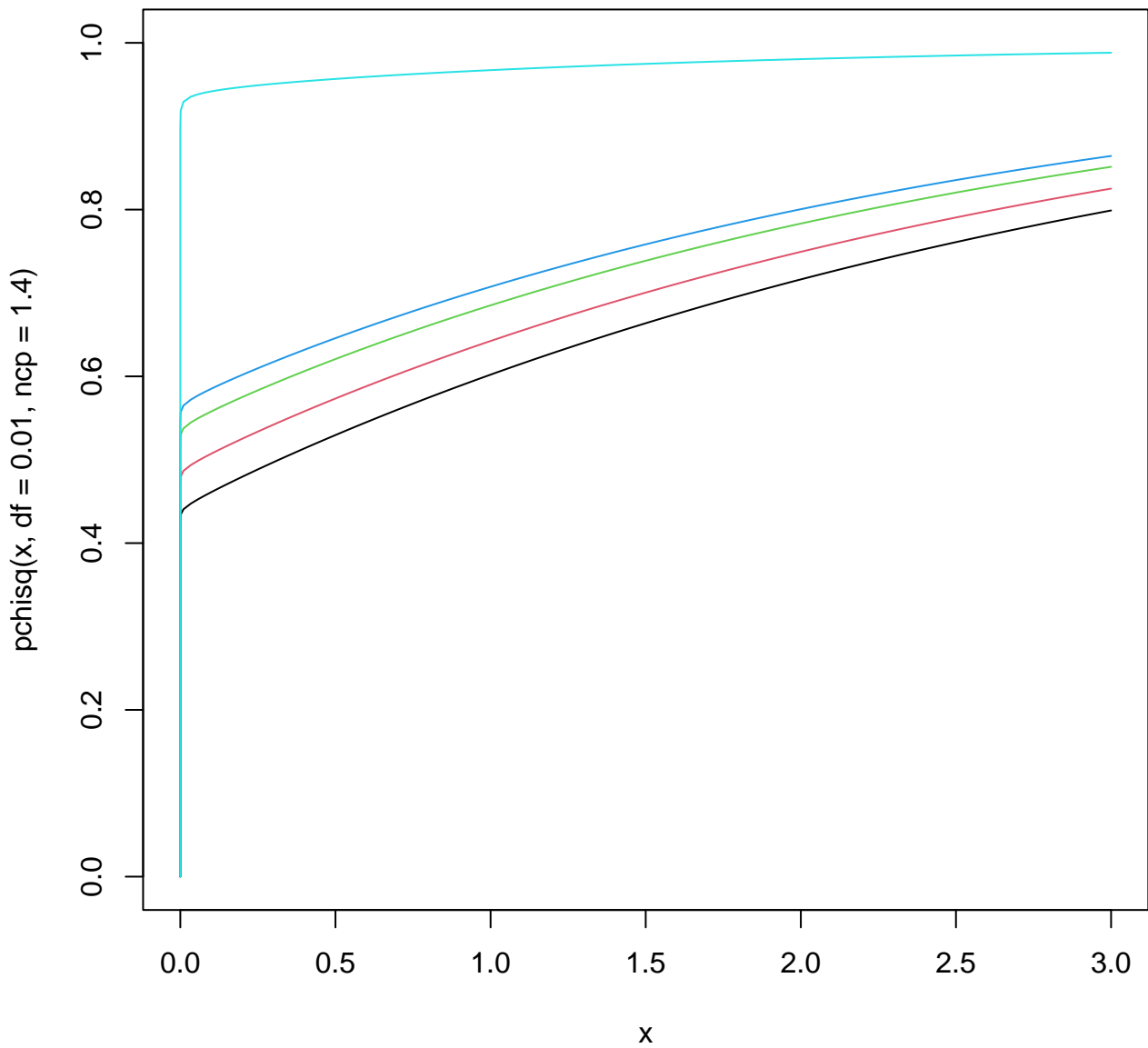


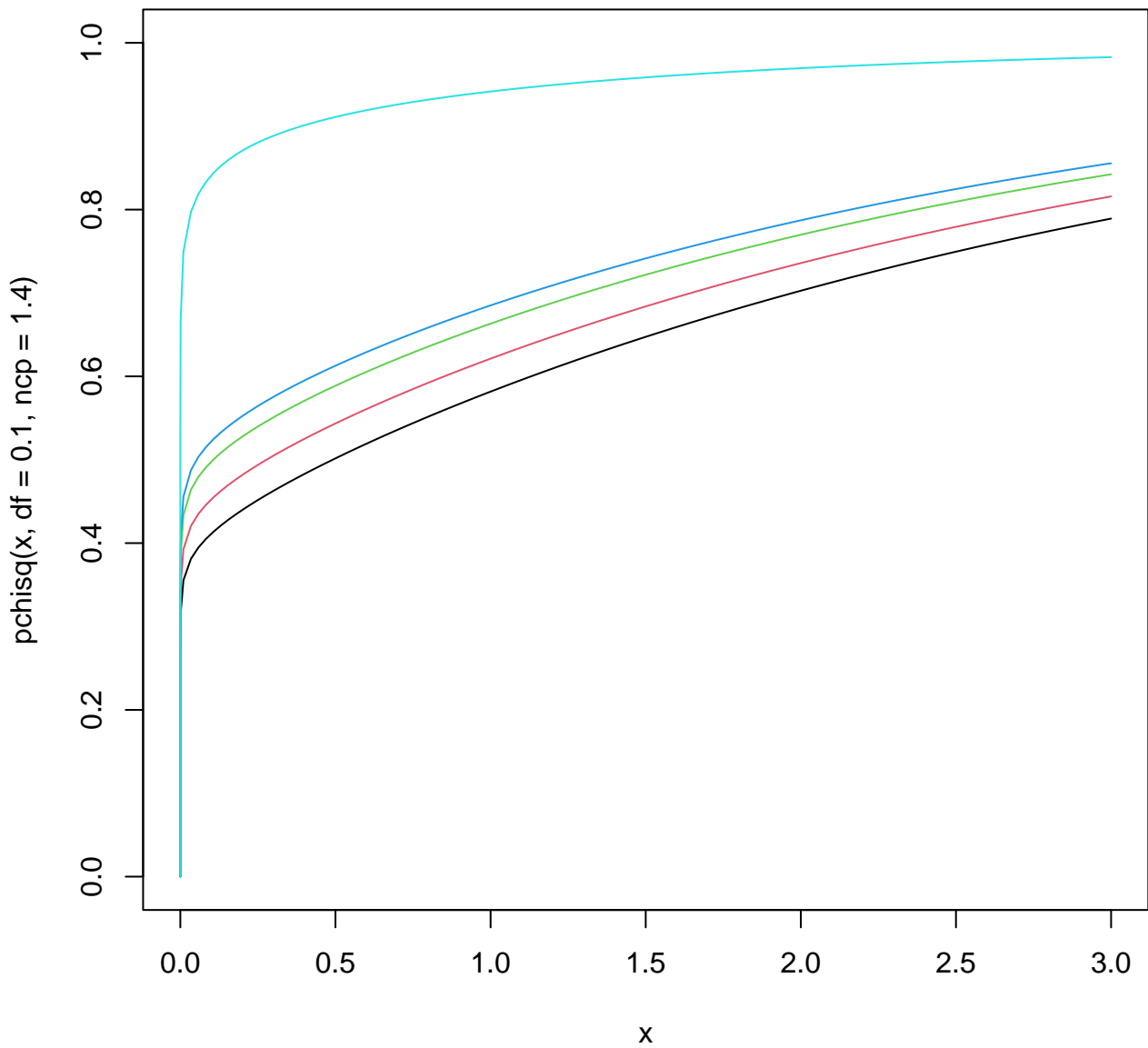










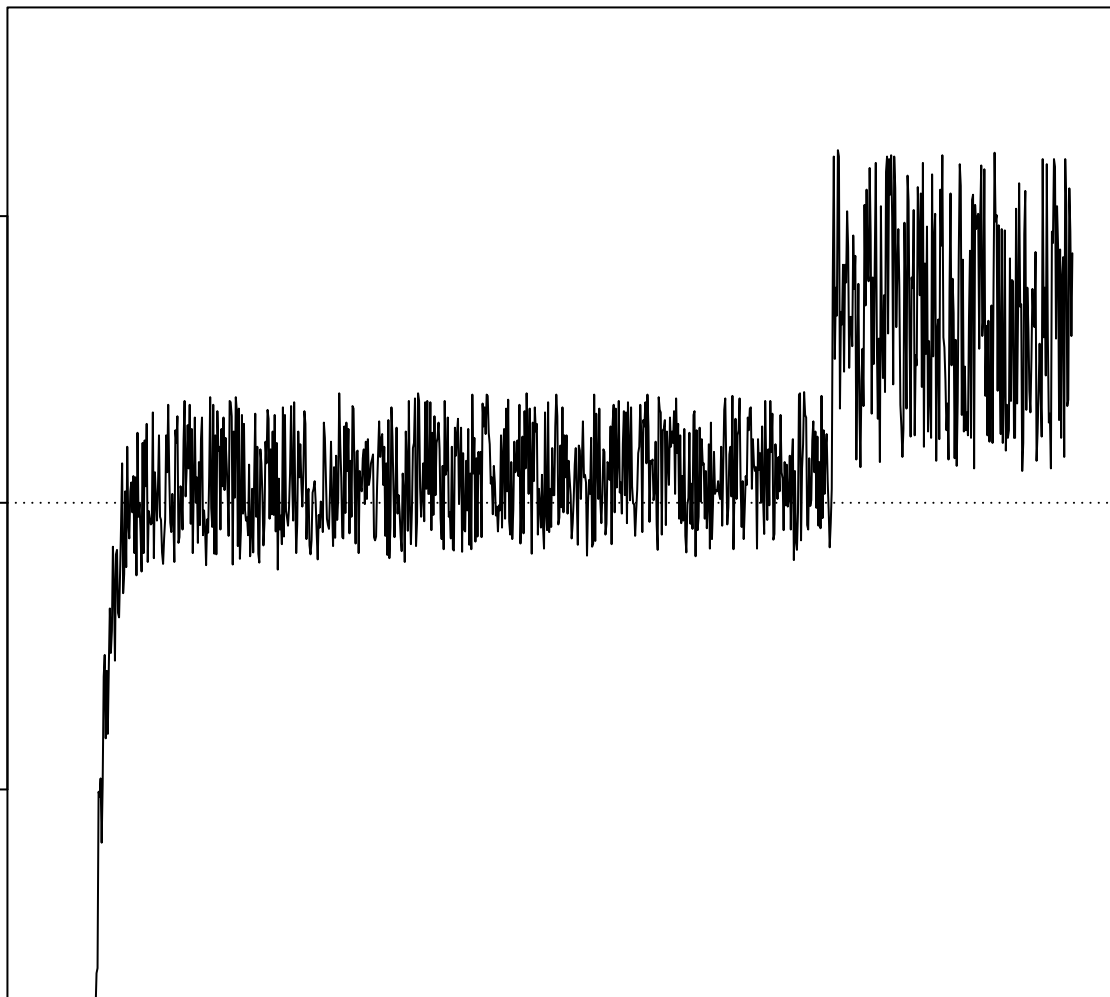


pchisq(x, 1.01, ncp = 80, log = TRUE)

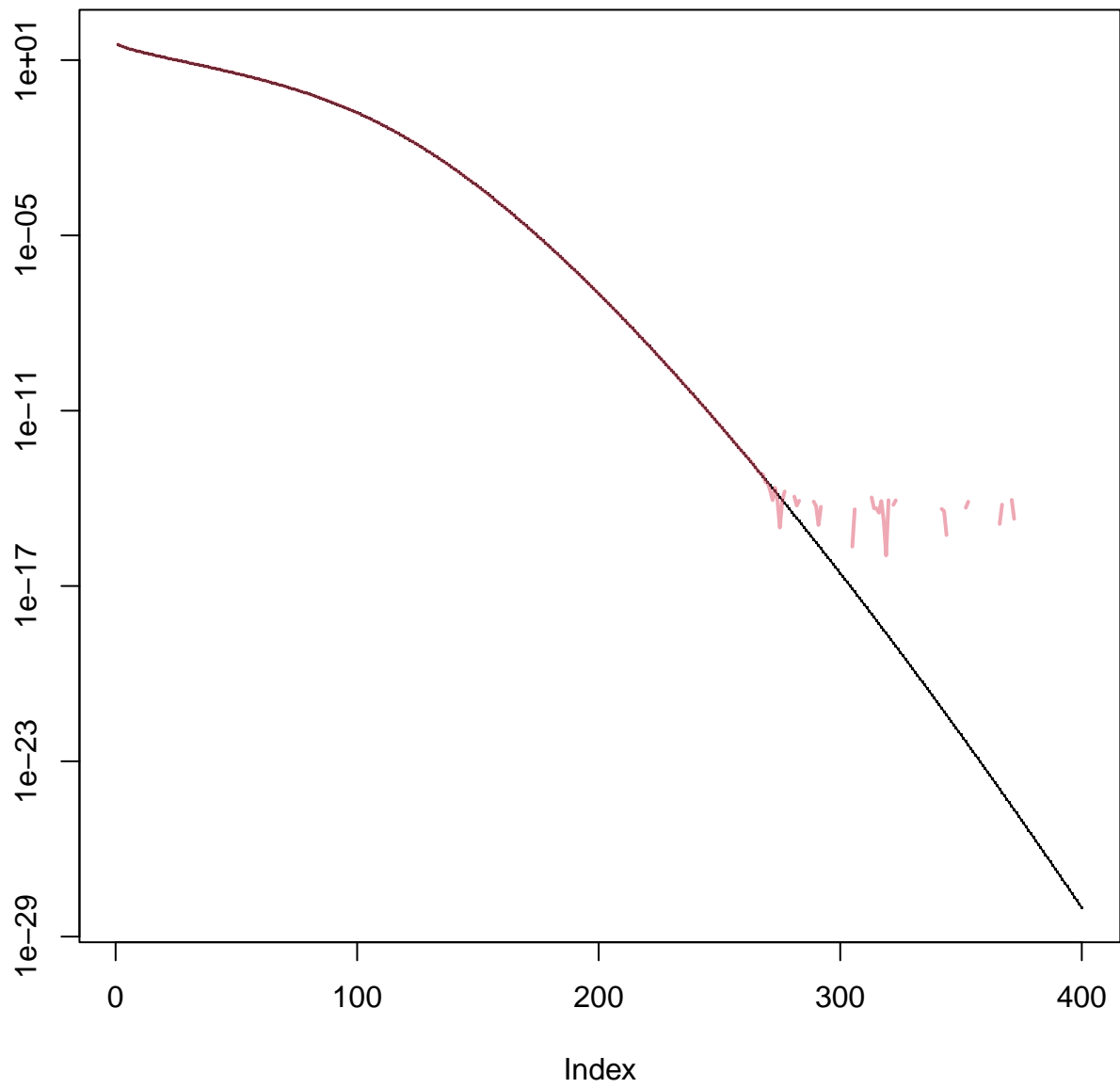
5e-14
0e+00
-5e-14

250 300 350 400 450 500 550 600

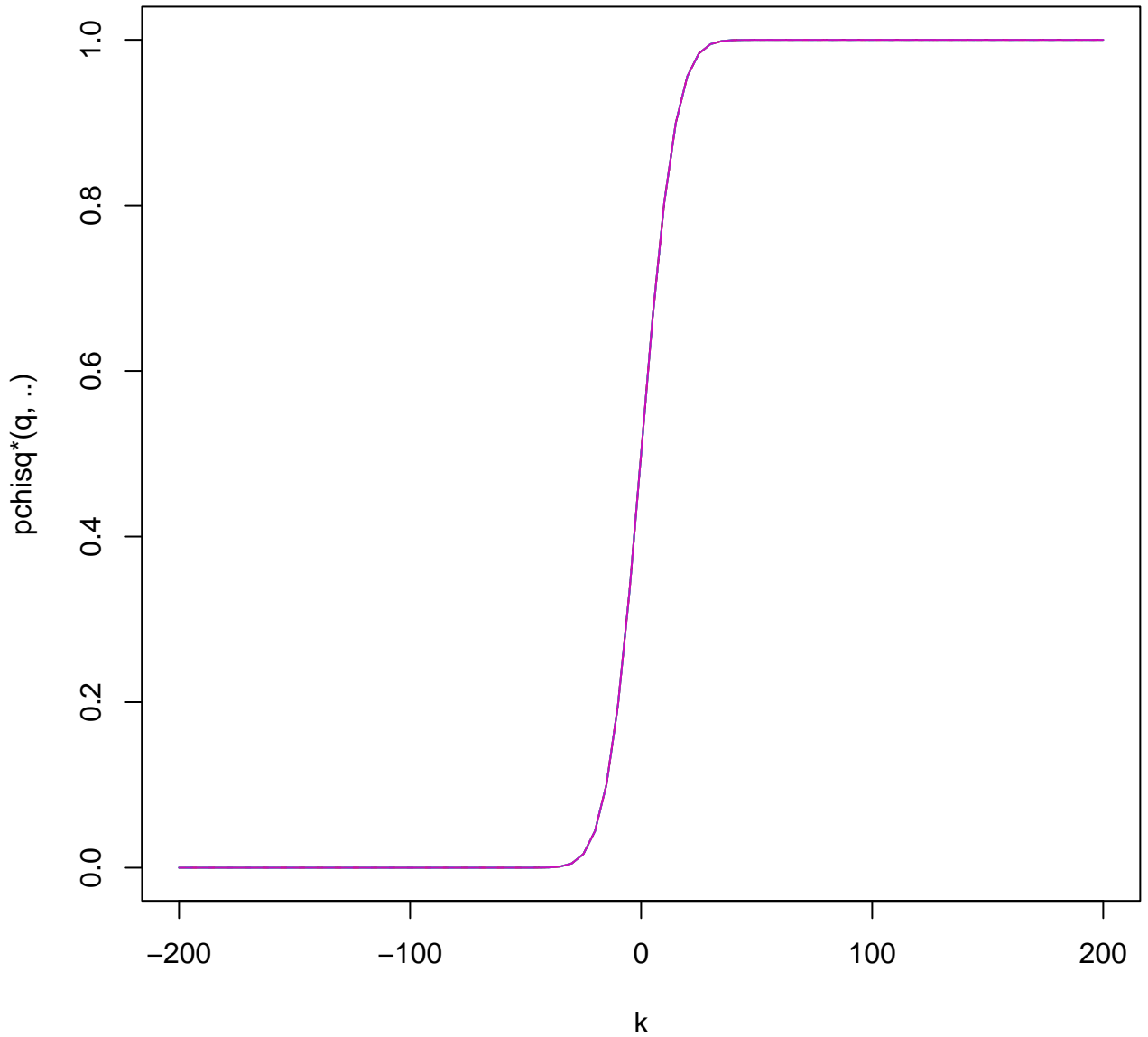
x



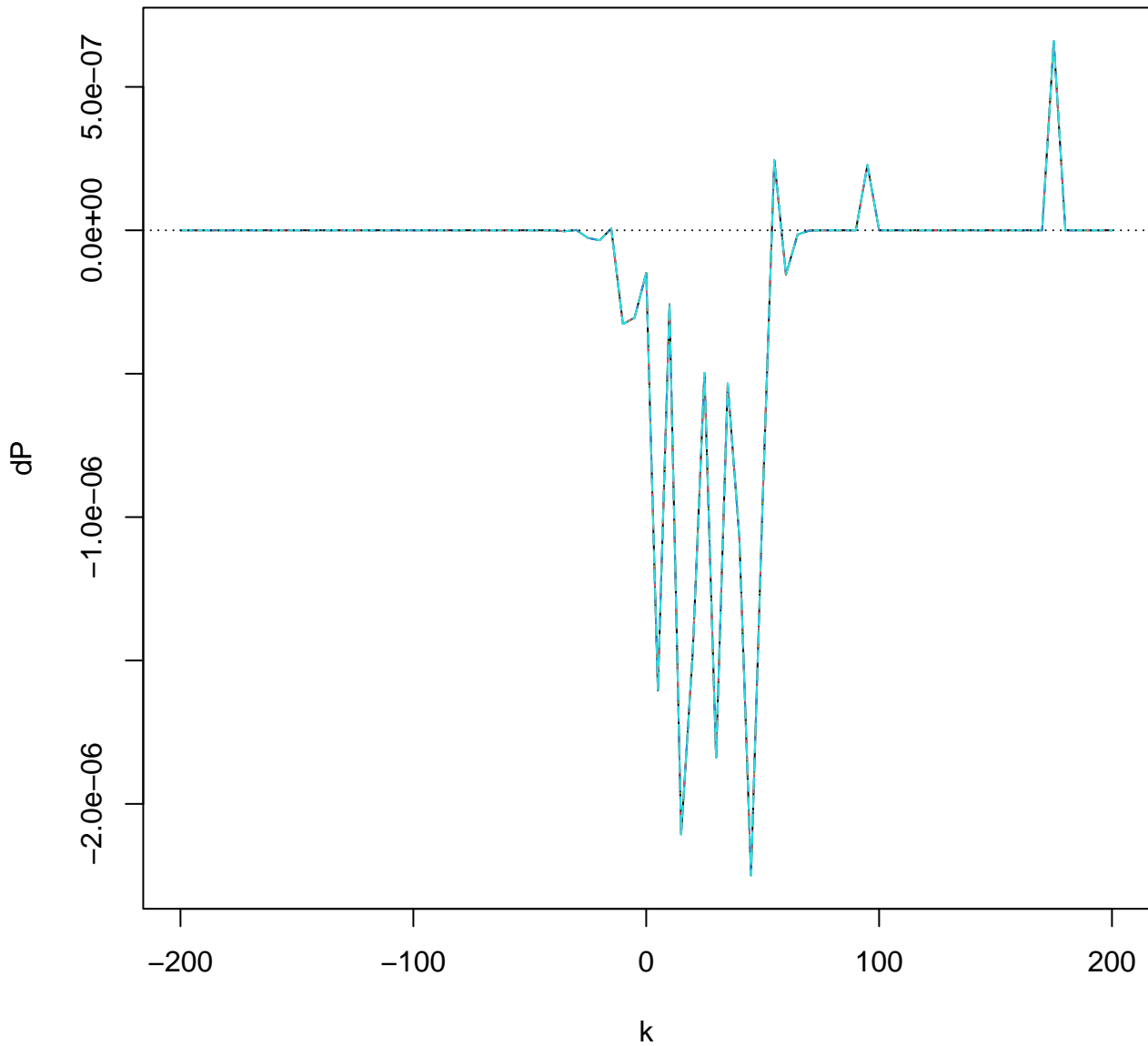
`p1 <- -pchisq(1:400, 1.01, ncp = 80 * (1 - .Machine$double.eps), log = TRUE)`

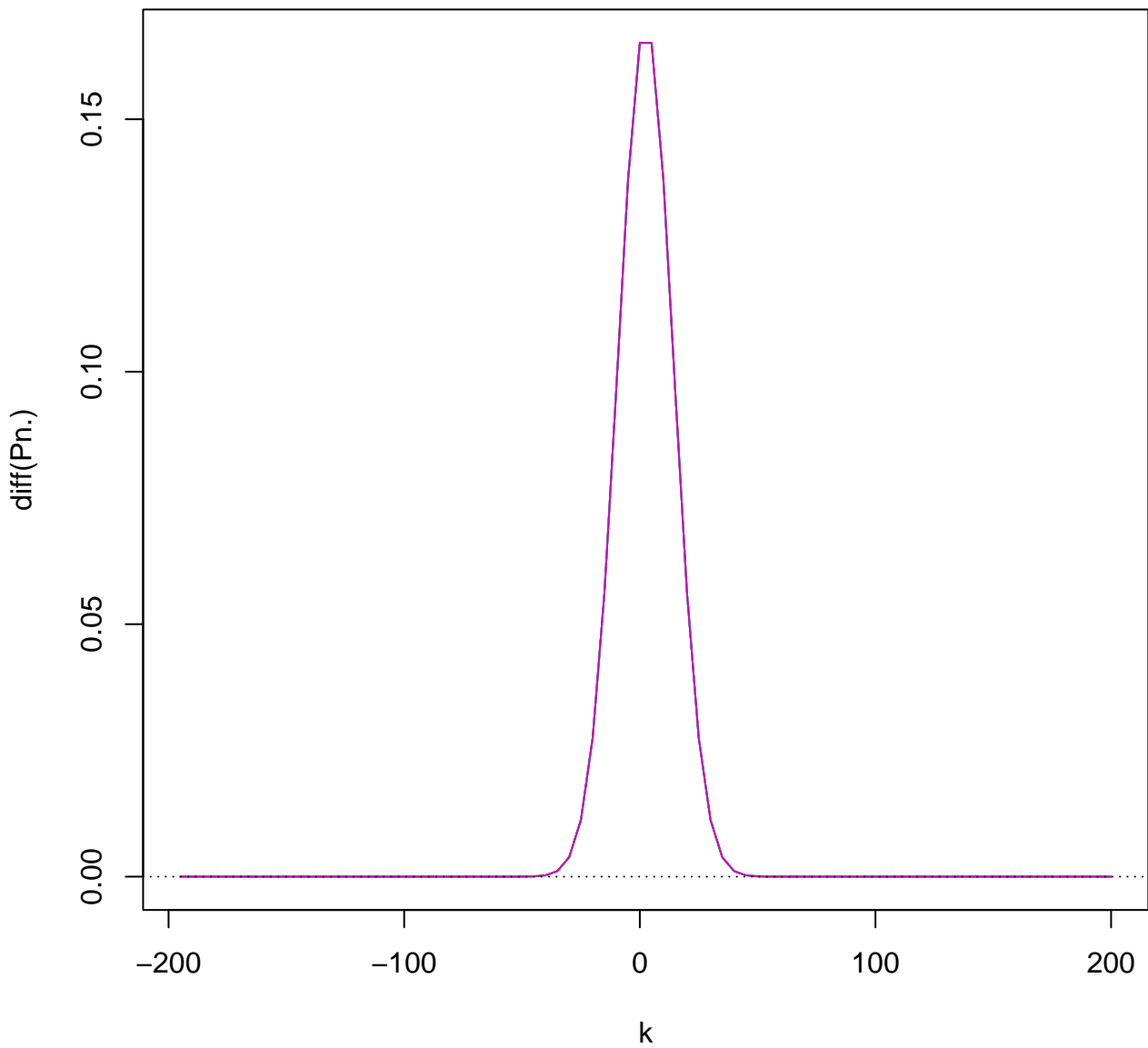


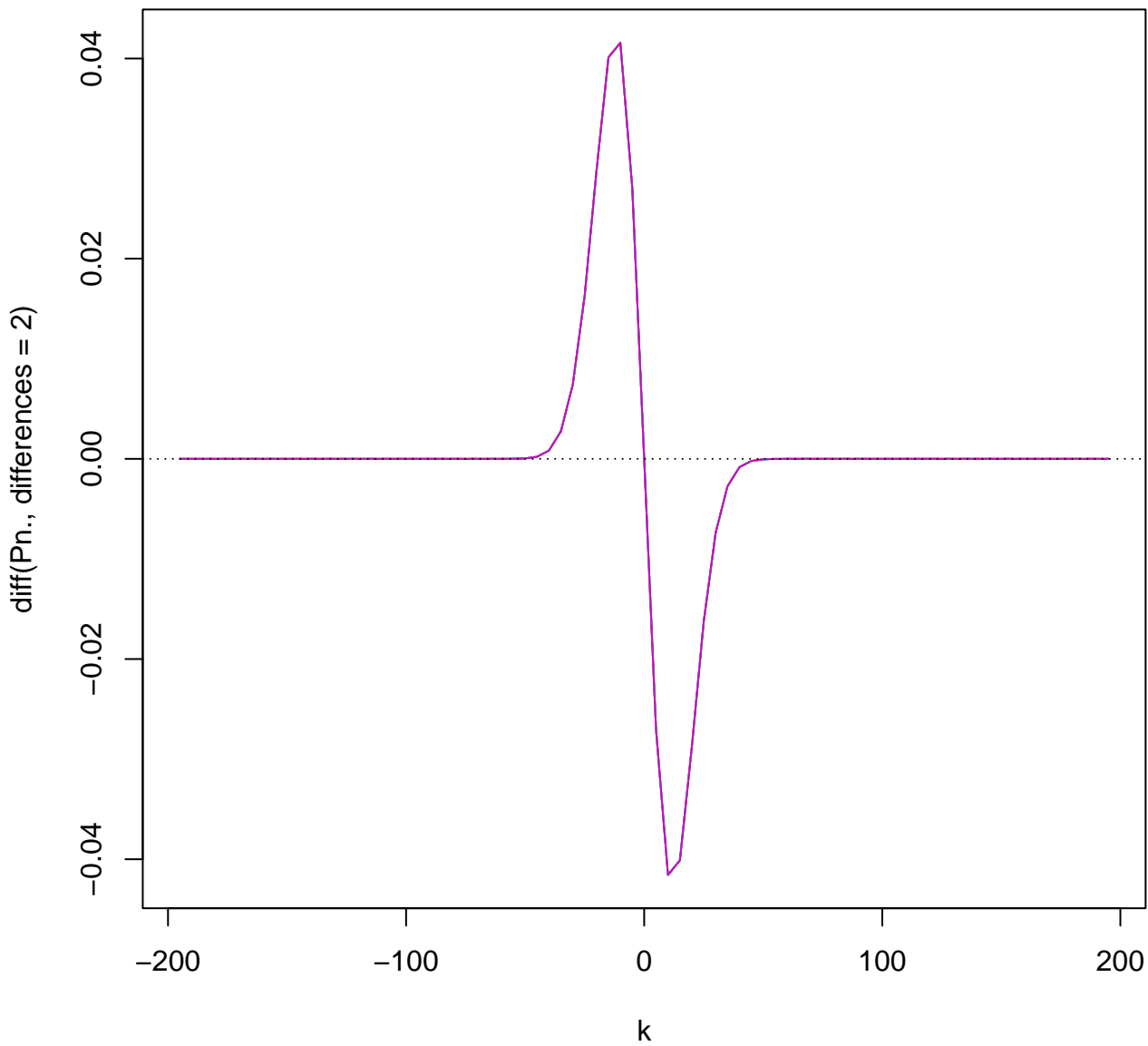
$\text{pchisq}^*(q = \mu(1 + k^2^{-18}), df = 1e+09, ncp = 99)$

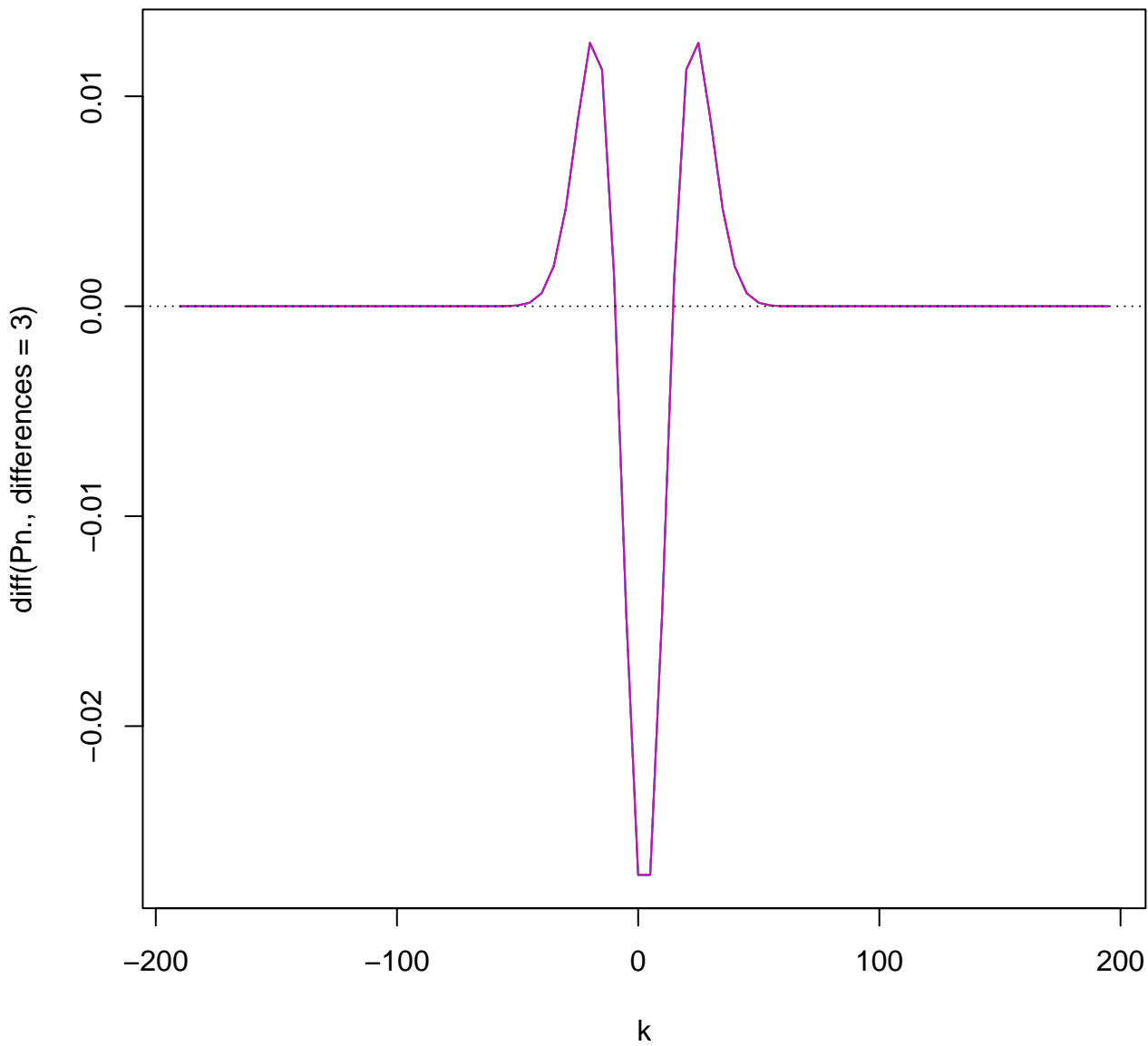


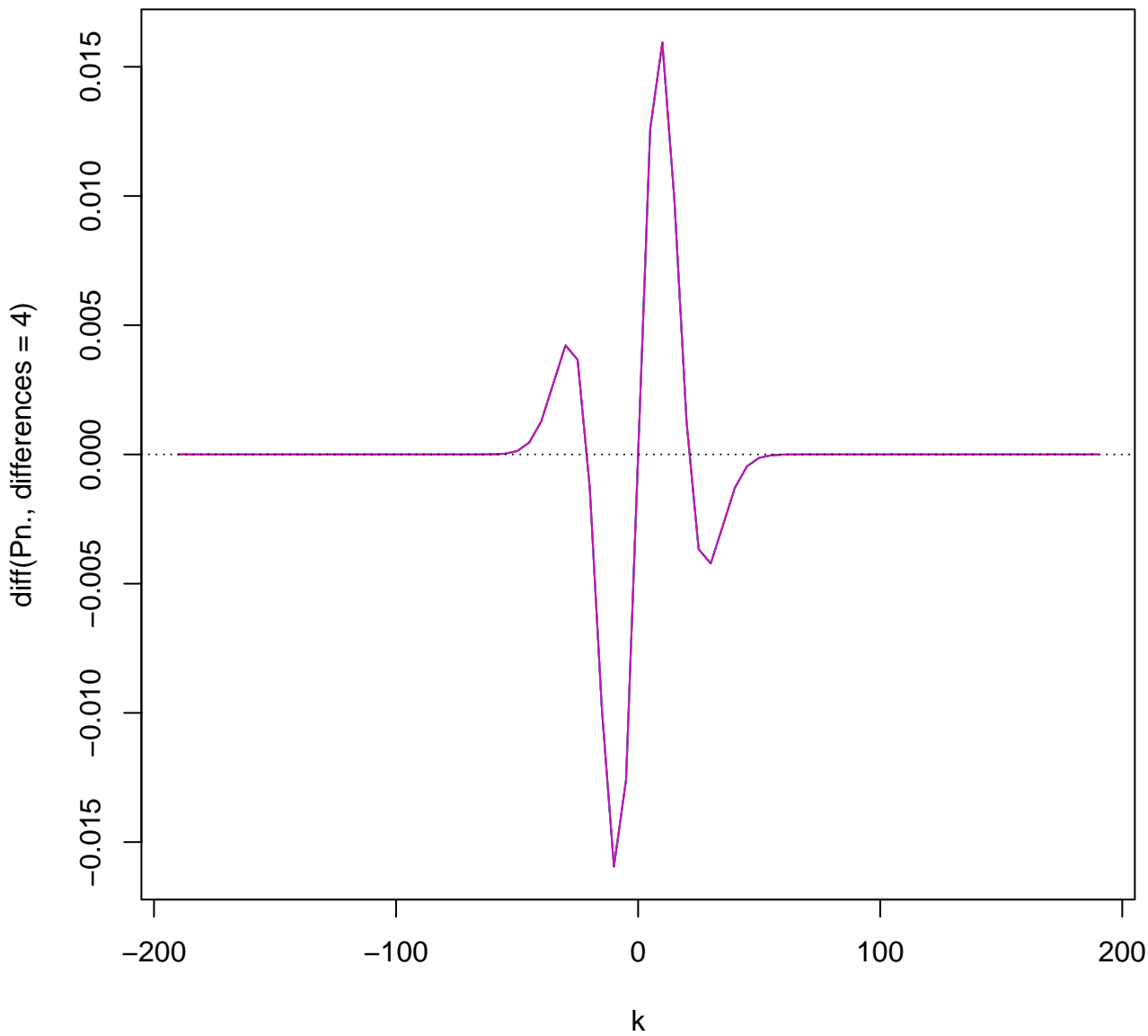
Difference pchisq* - pchisq(..)
Difference list(q == mu(1 + k * 2^-18), df == 1e+09, ncp == 99) - pchisq(..)

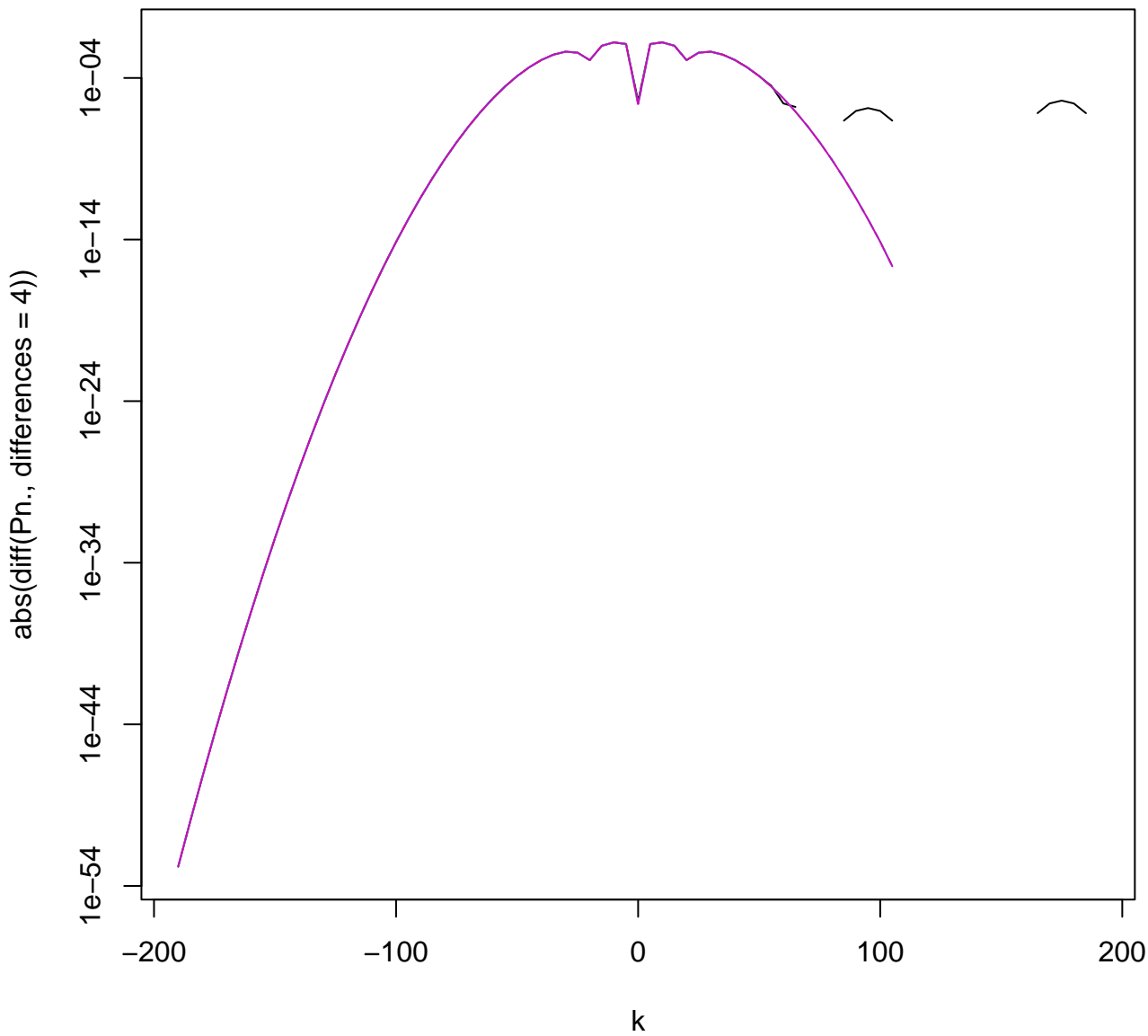




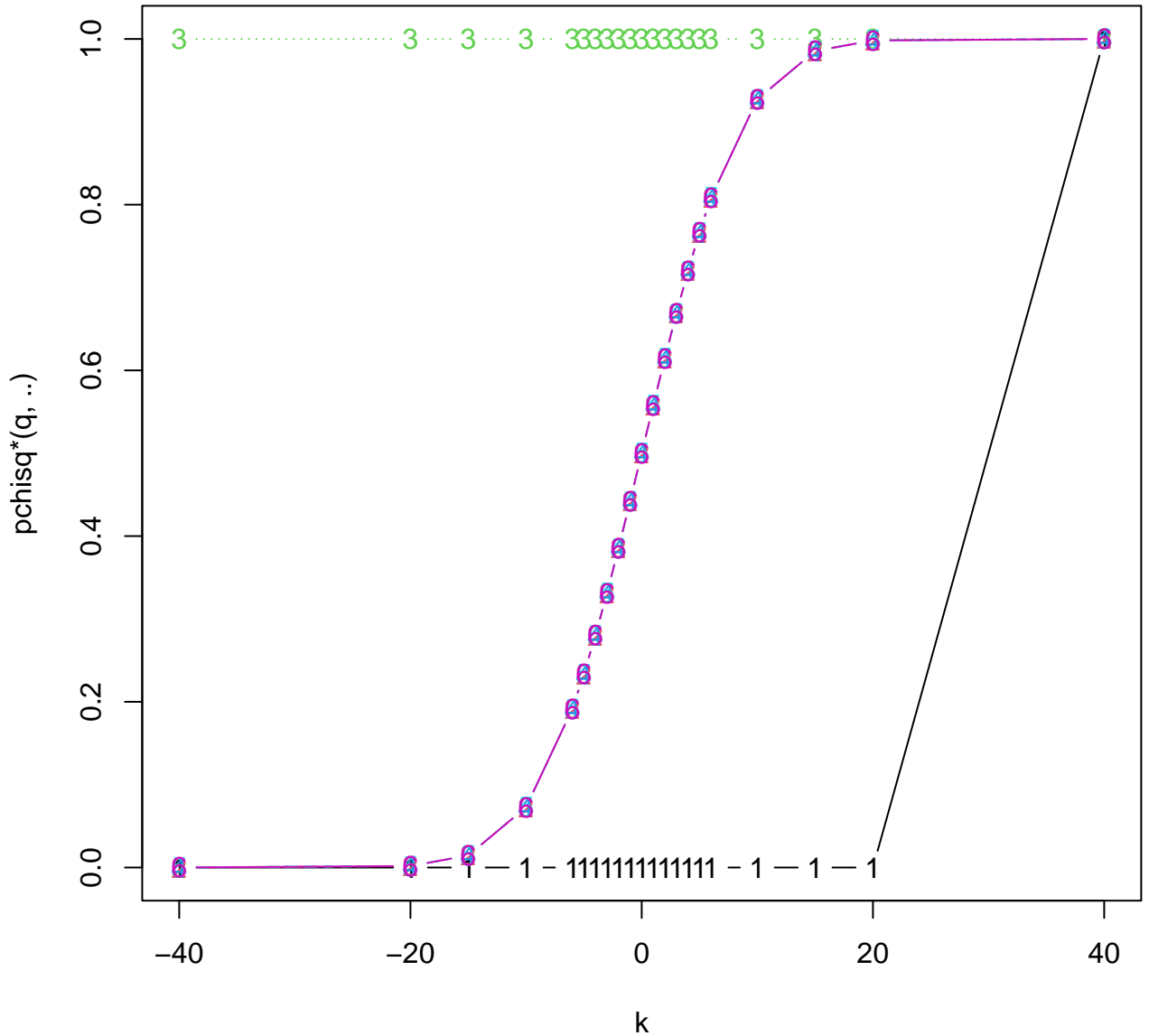




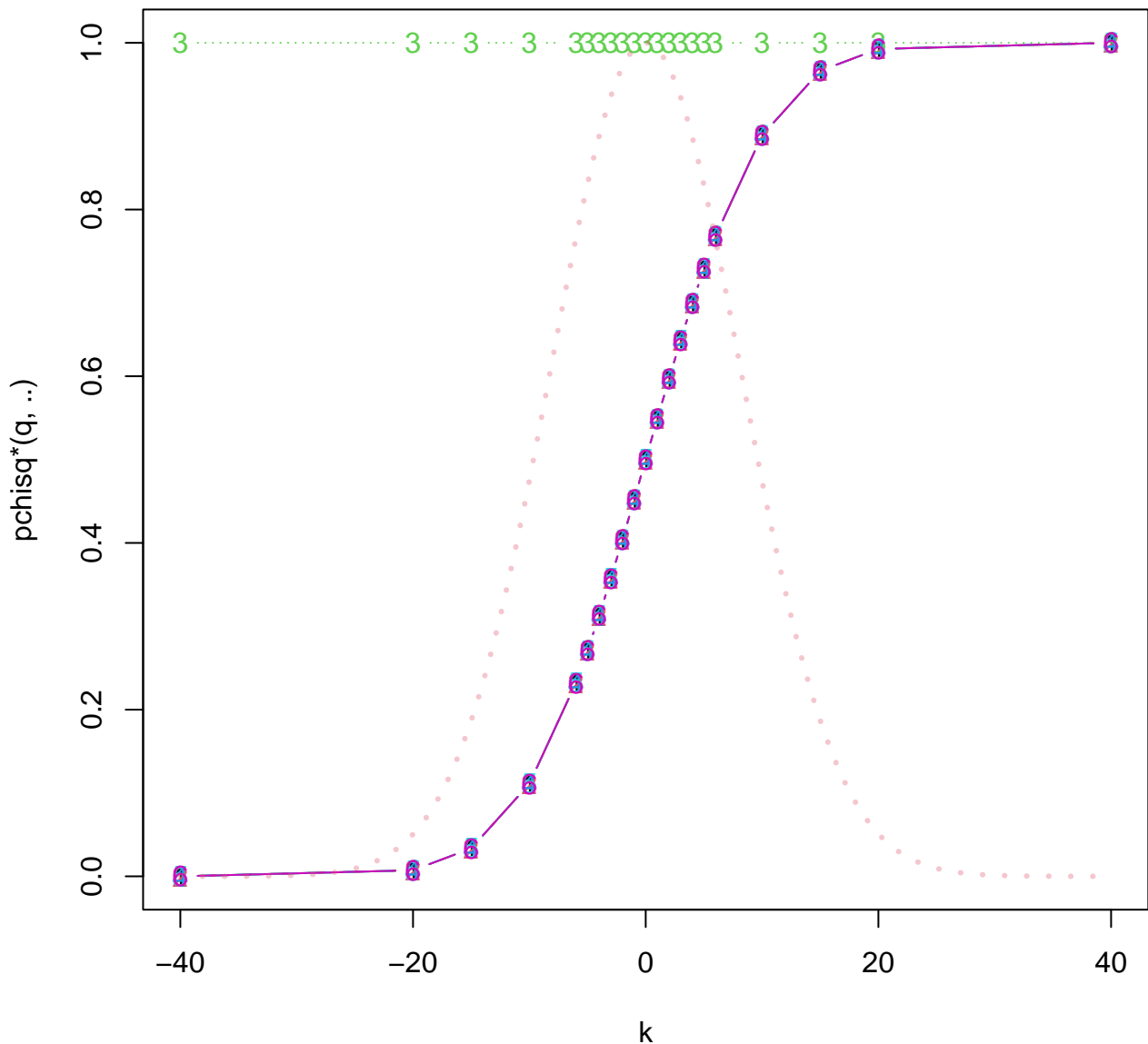




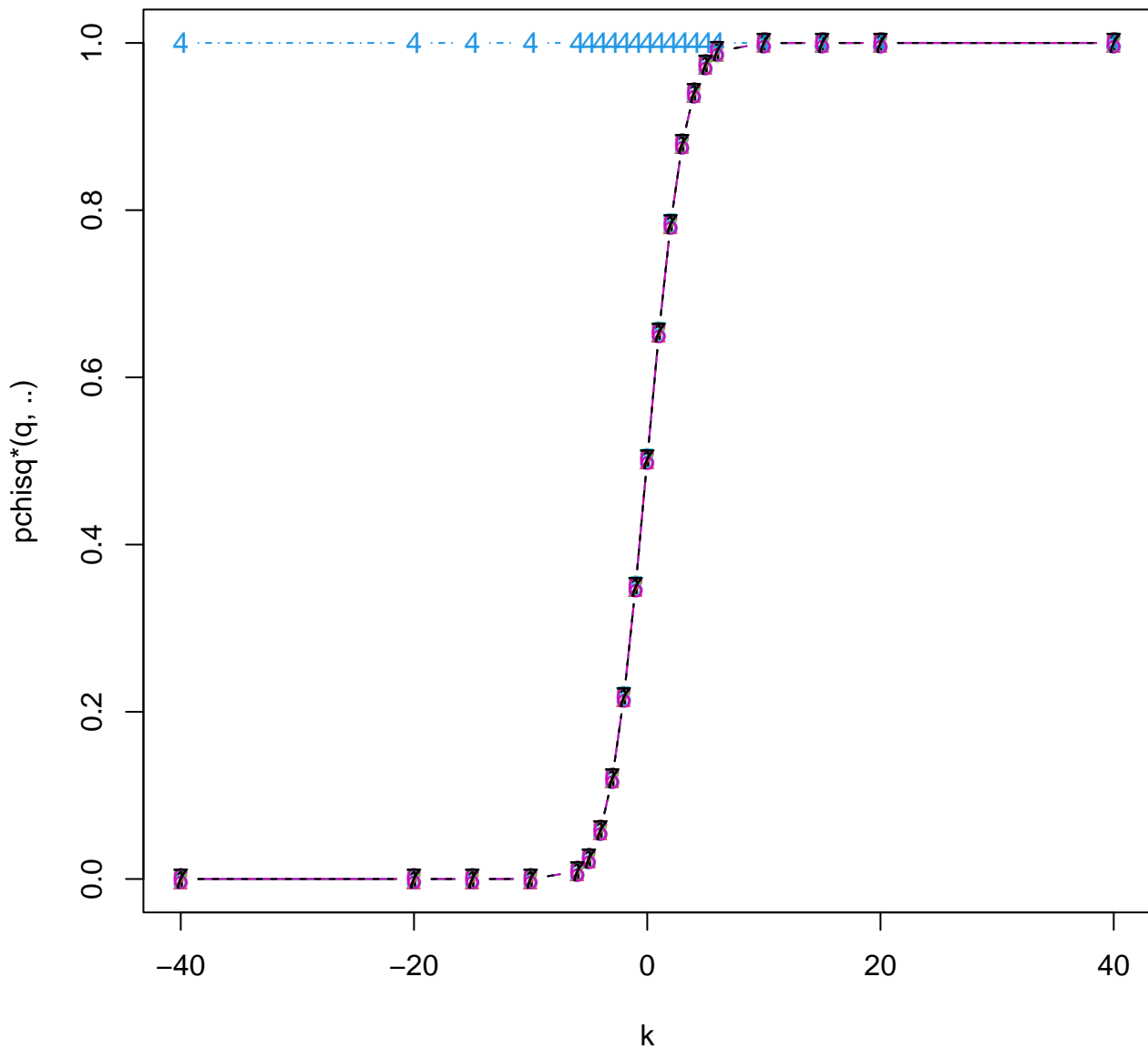
$\text{pchisq}^*(q = \mu(1 + k2^{-35}), \mu = \nu + \lambda = 99 + 1e+20, \text{df} = 99, \text{ncp} = 1e+20)$



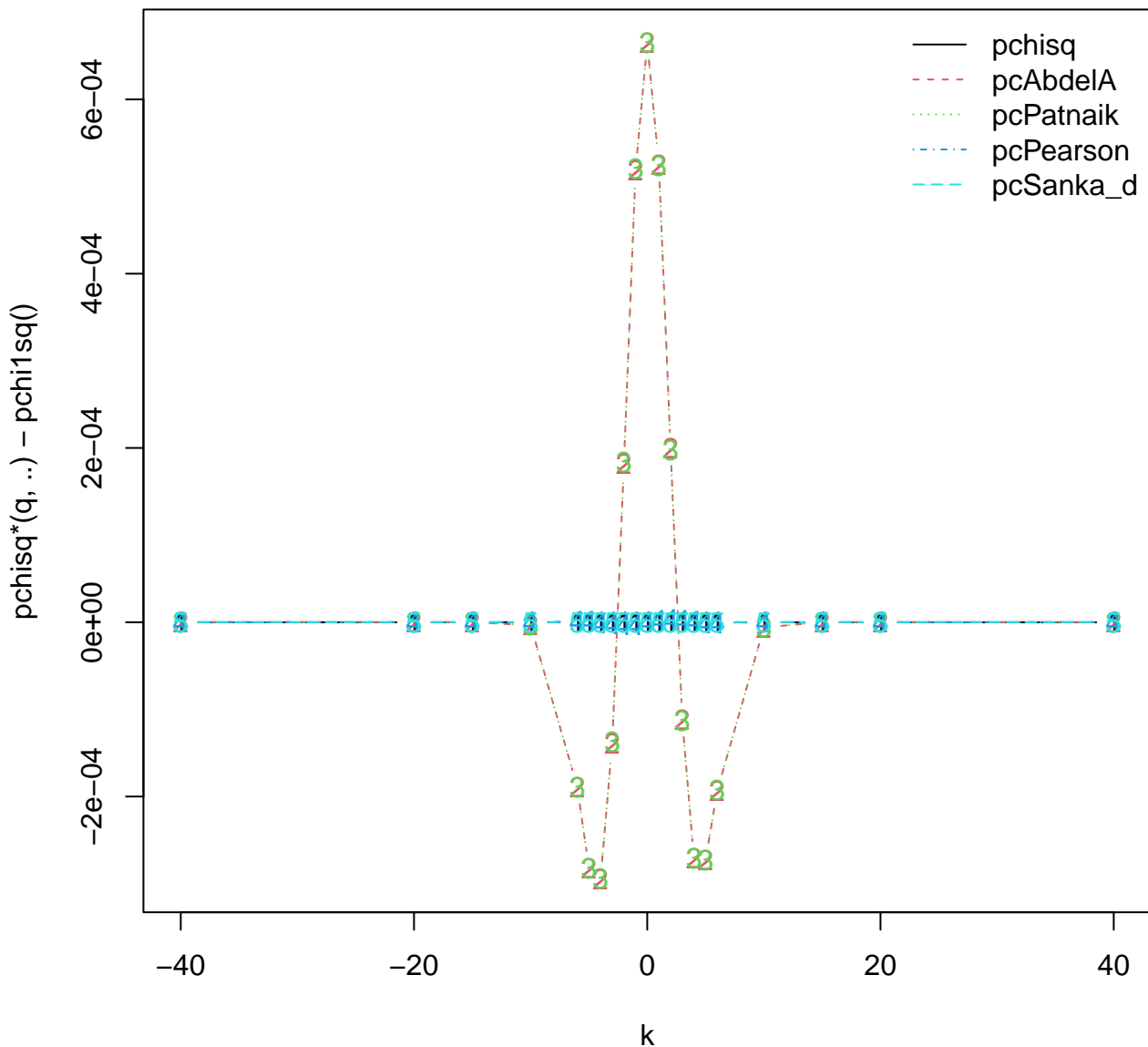
$\text{pchisq}^*(q = \mu(1 + k^2^{-12}), \mu = \nu + \lambda = 99 + 1\text{e}+06, \text{df} = 99, \text{ncp} = 1\text{e}+06)$



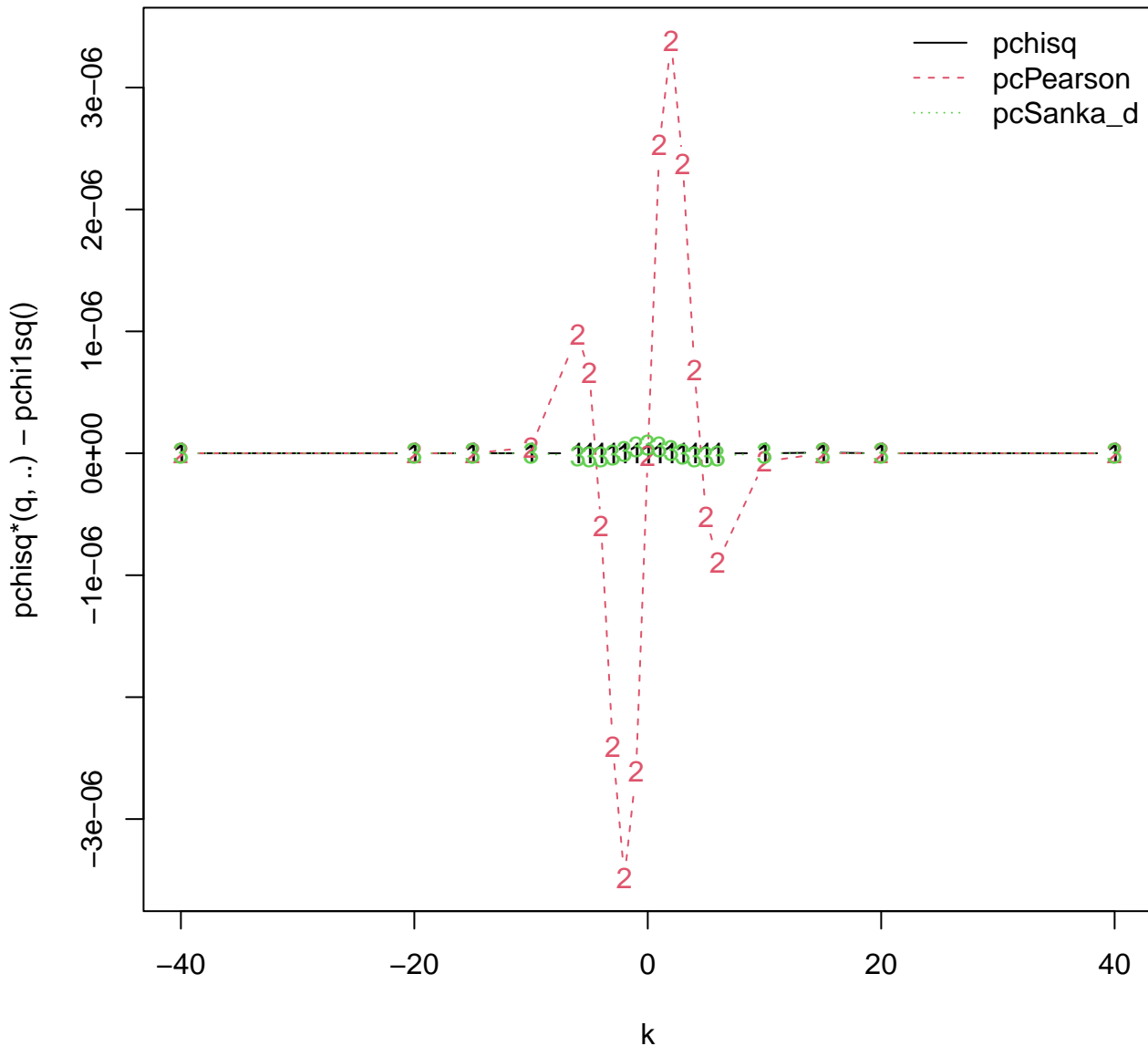
$pchi^*(q = \mu(1 + k2^{-7}) - pchi.1, \mu = v + \lambda = 1 + 10000, df = 1, ncp = 10000)$



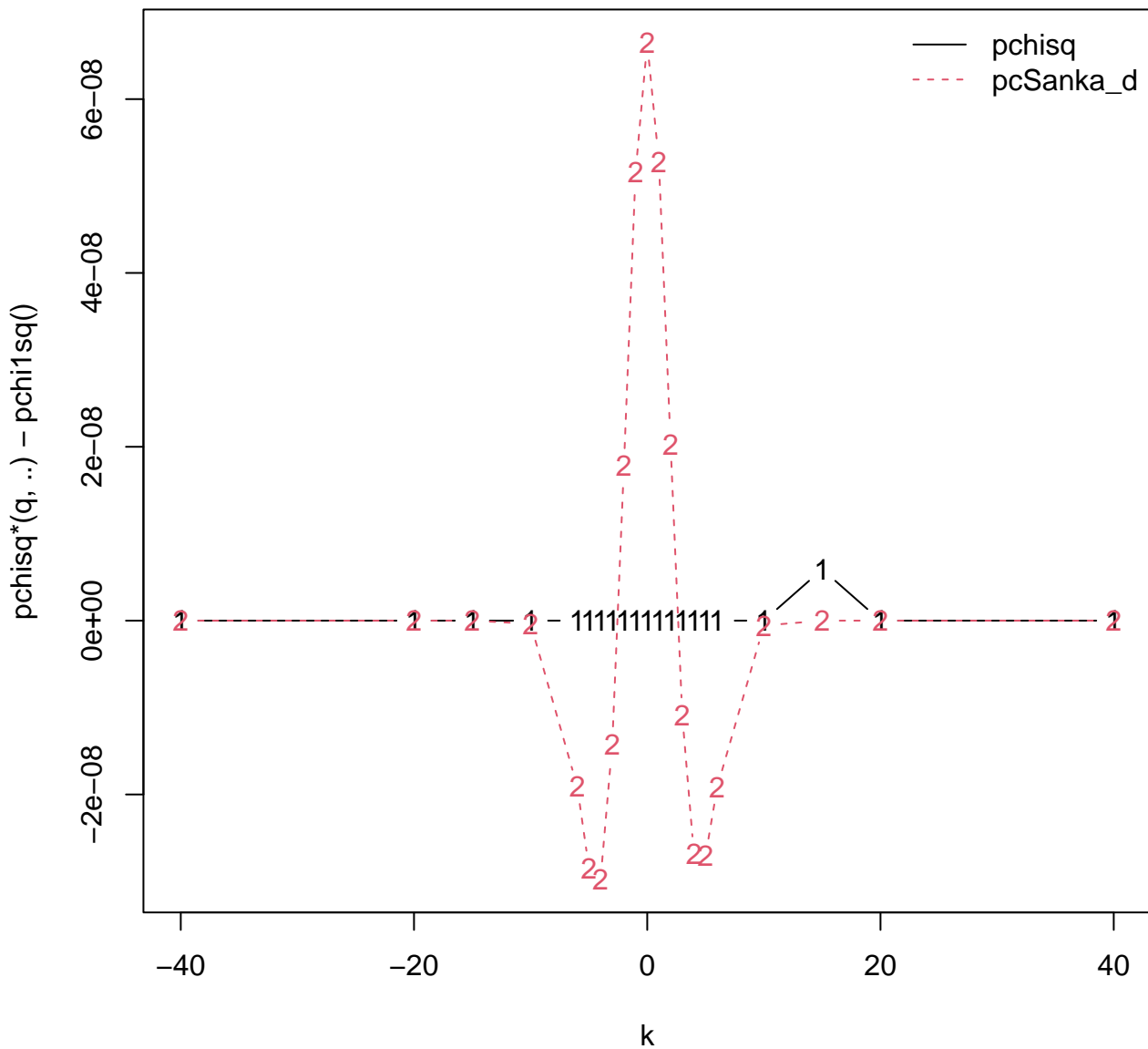
$pchi^*(q = \mu(1 + k2^{-7}) - pchi.1, \mu = v + \lambda = 1 + 10000, df = 1, ncp = 10000)$



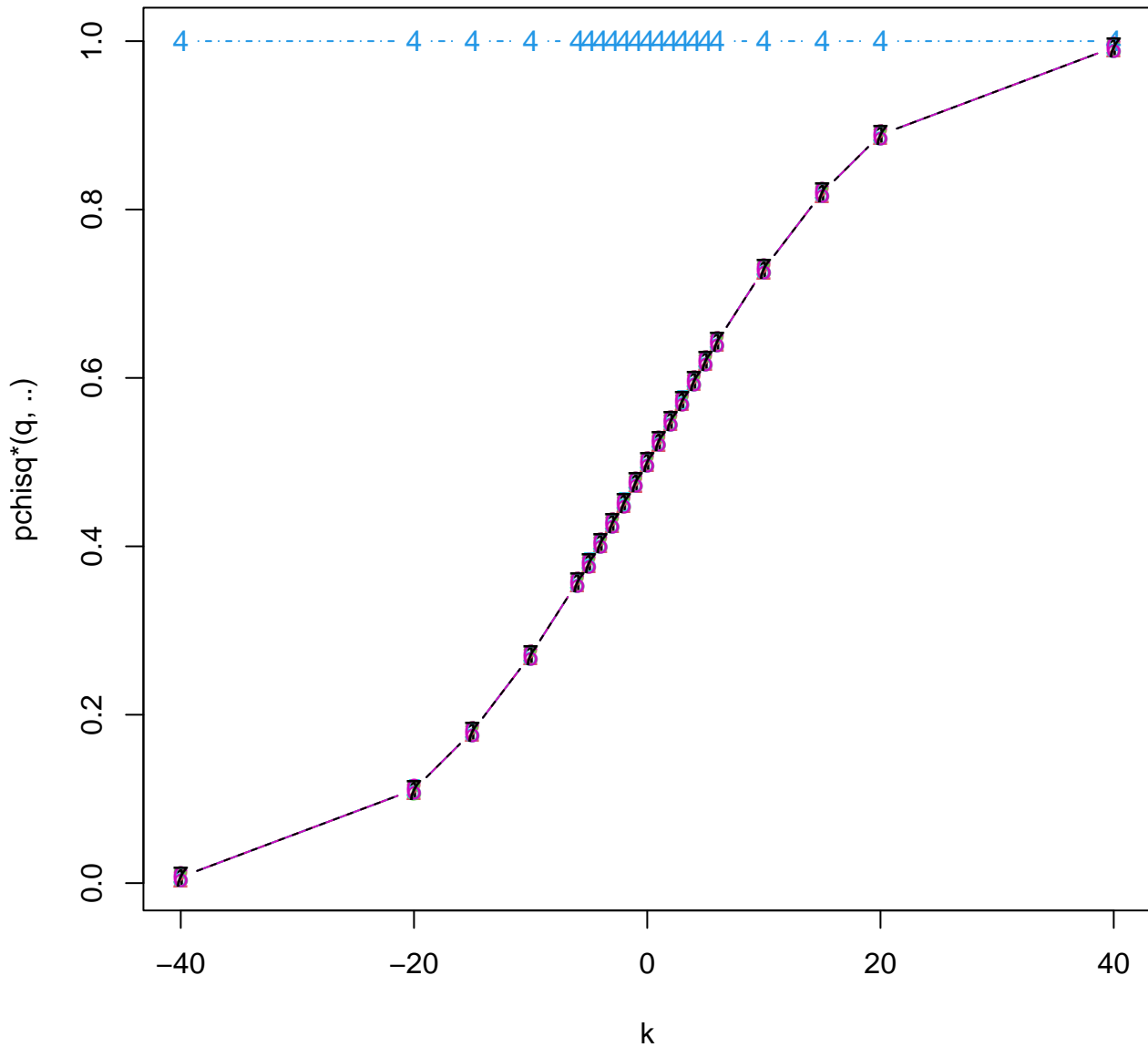
$pchi^*(q = \mu(1 + k2^{-7}) - pchi.1, \mu = v + \lambda = 1 + 10000, df = 1, ncp = 10000)$



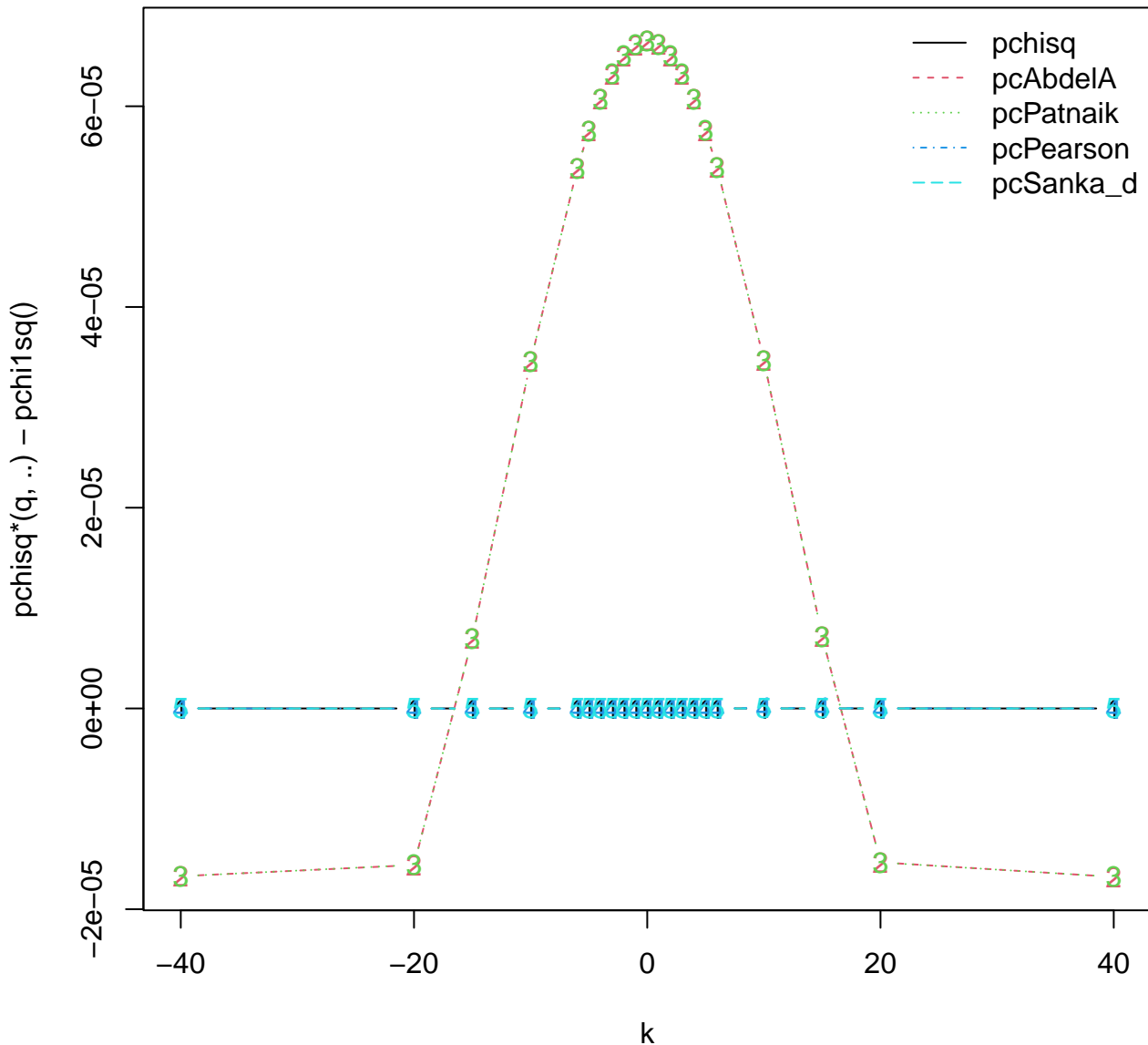
$pchi^*(q = \mu(1 + k2^{-7}) - pchi.1, \mu = v + \lambda = 1 + 10000, df = 1, ncp = 10000)$



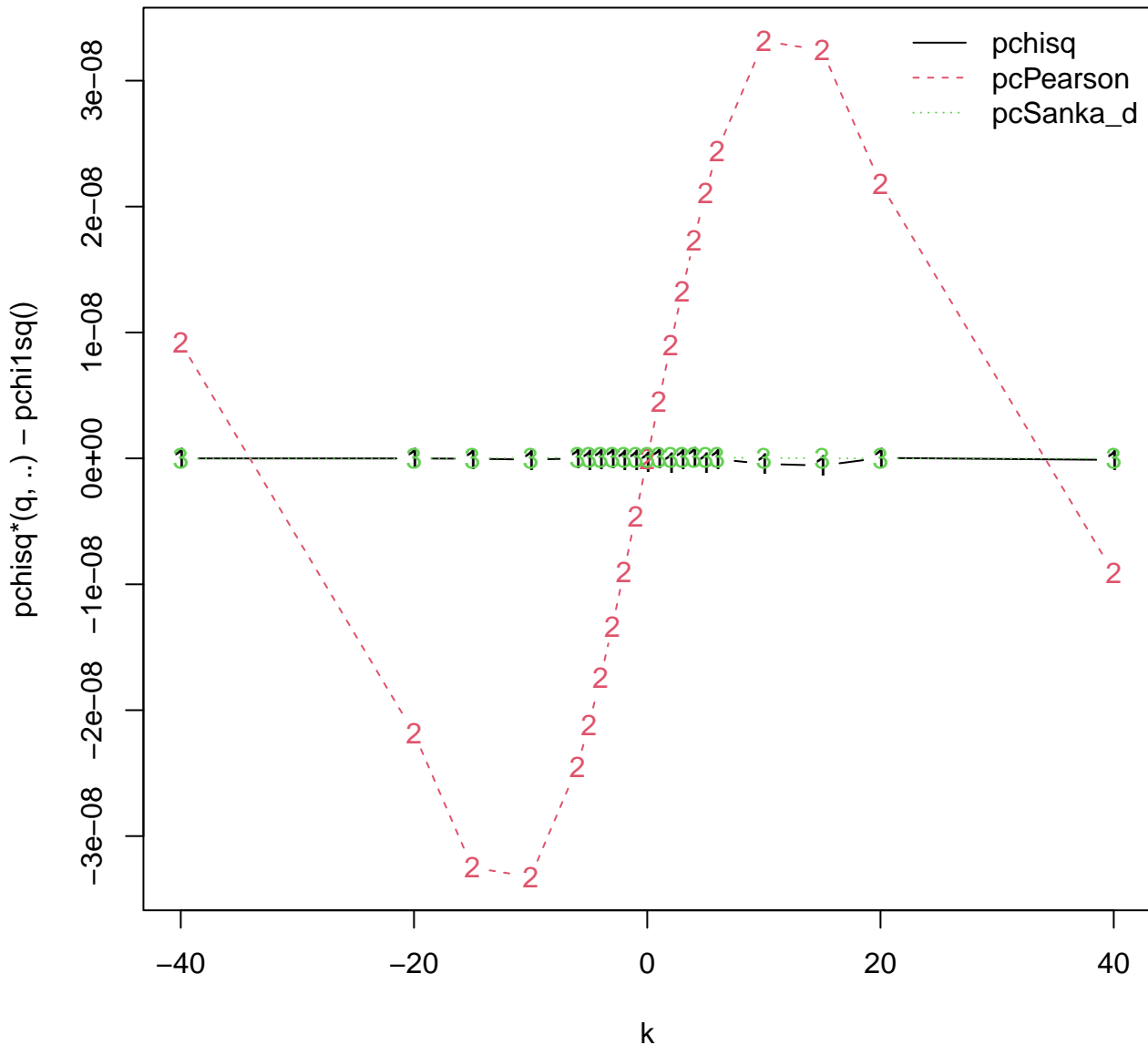
$pchi^*(q = \mu(1 + k2^{-13}) - pchi.1, \mu = v + \lambda = 1 + 1e+06, df = 1, ncp = 1e+06)$



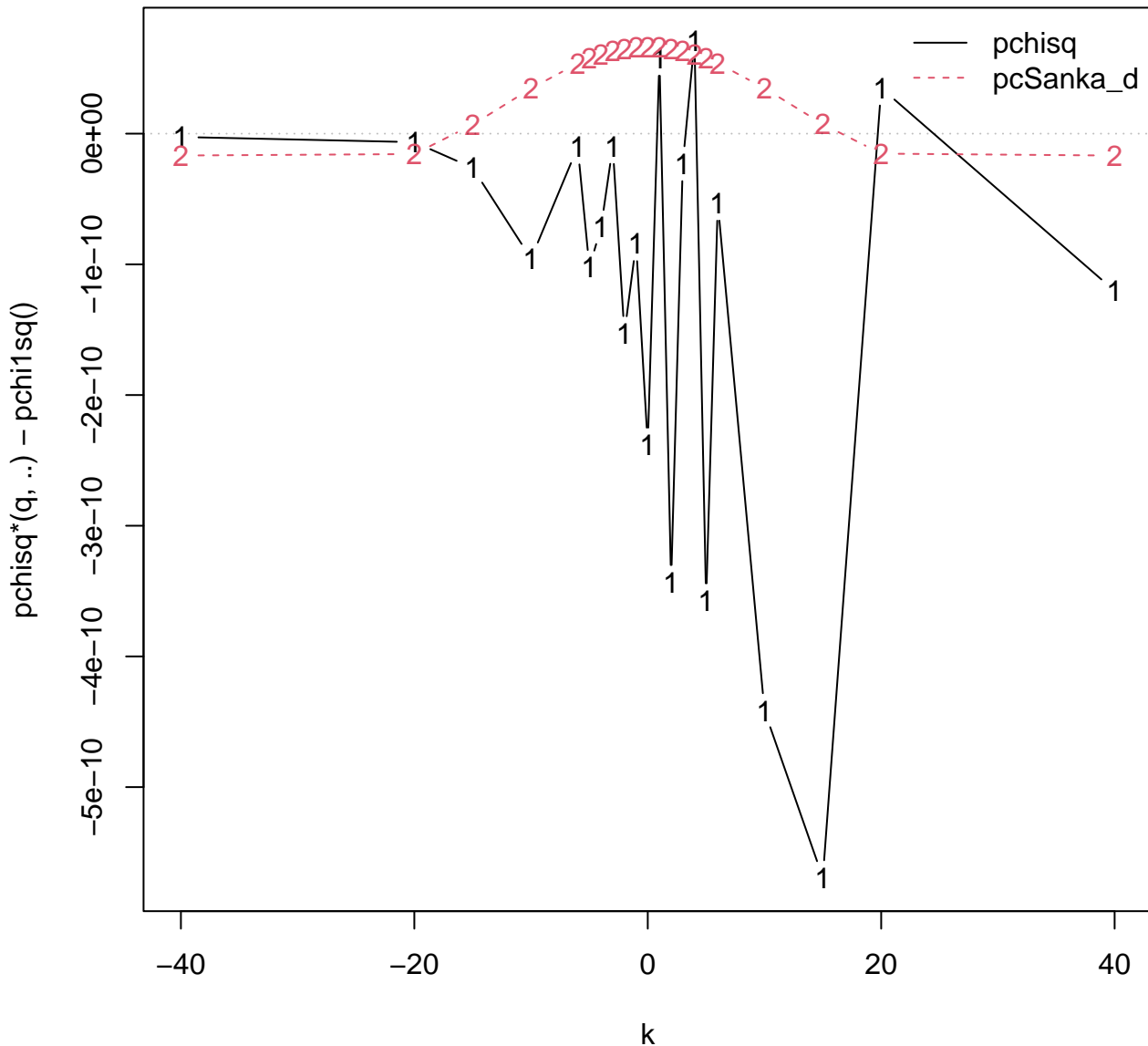
$p\chi^*(q = \mu(1 + k2^{-13}) - p\chi_{i.1}, \mu = v + \lambda = 1 + 1e+06, df = 1, ncp = 1e+06)$



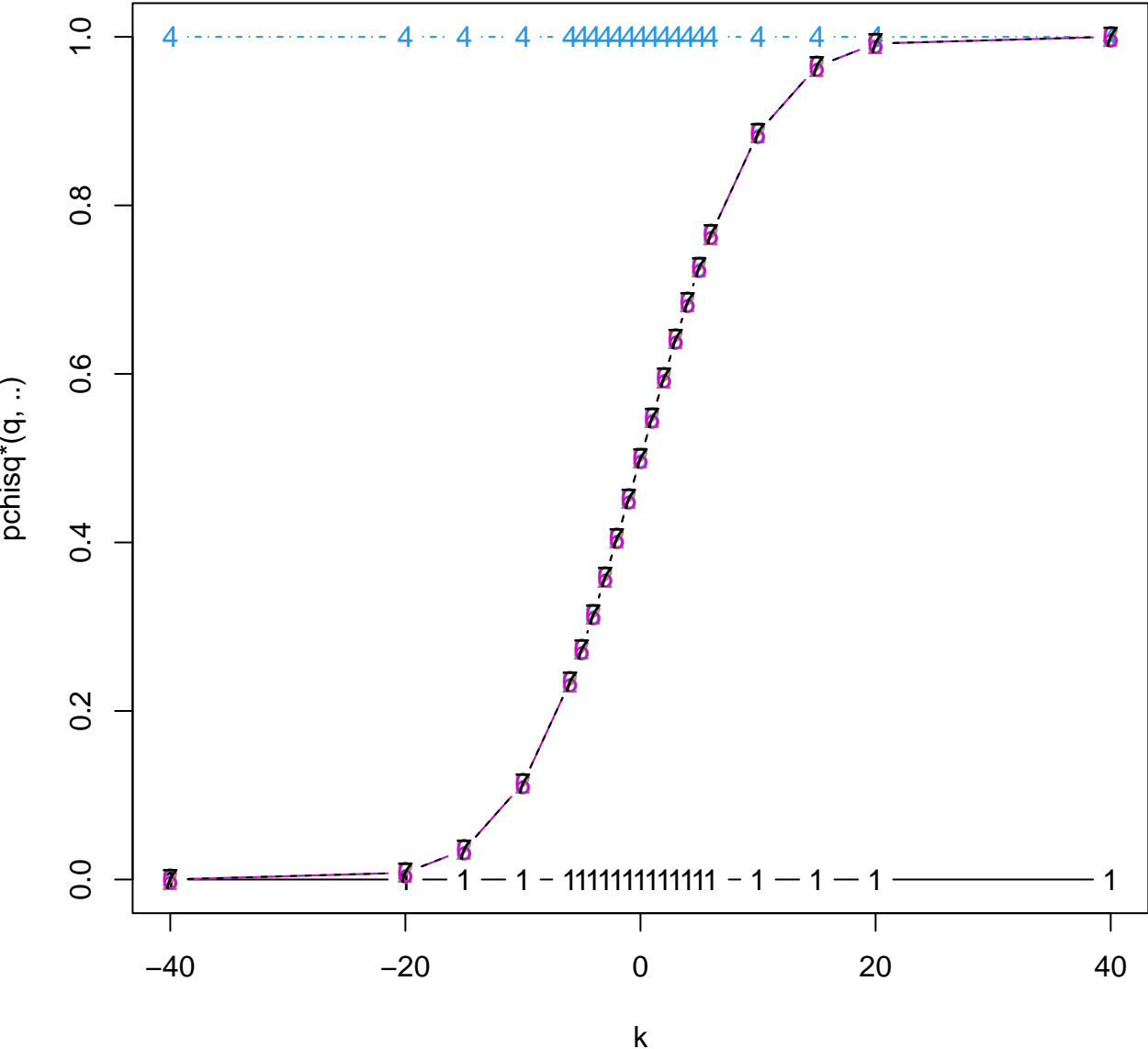
$pchi^*(q = \mu(1 + k2^{-13}) - pchi.1, \mu = v + \lambda = 1 + 1e+06, df = 1, ncp = 1e+06)$



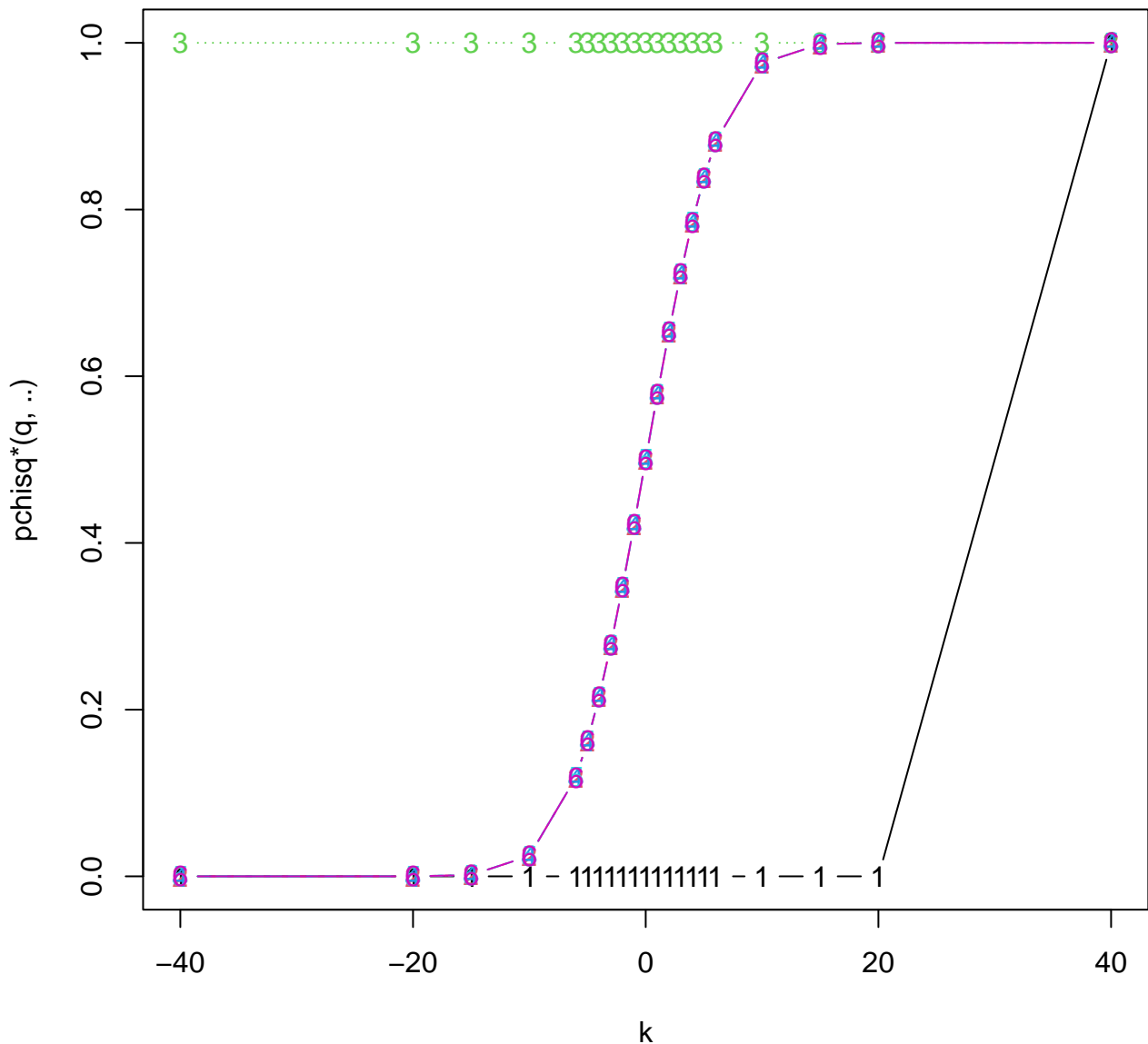
$pchi^*(q = \mu(1 + k2^{-13}) - pchi.1, \mu = v + \lambda = 1 + 1e+06, df = 1, ncp = 1e+06)$



$\text{pchisq}^*(q = \mu(1 + k2^{-17}), \mu = \nu + \lambda = 3 + 1\text{e}+09, \text{df} = 3, \text{ncp} = 1\text{e}+09)$



$\text{pchisq}^*(q = \mu(1 + k^2^{-17}), \mu = \nu + \lambda = 1\text{e}+09 + 1, \text{df} = 1\text{e}+09, \text{ncp}/\text{df} = 1)$



$\text{pchisq}^*(q = \mu(1 + k^2^{-14}), \mu = \nu + \lambda = 2e+06 + 0.5, \text{df} = 2e+06, \text{ncp}/\text{df} = 0.5)$

