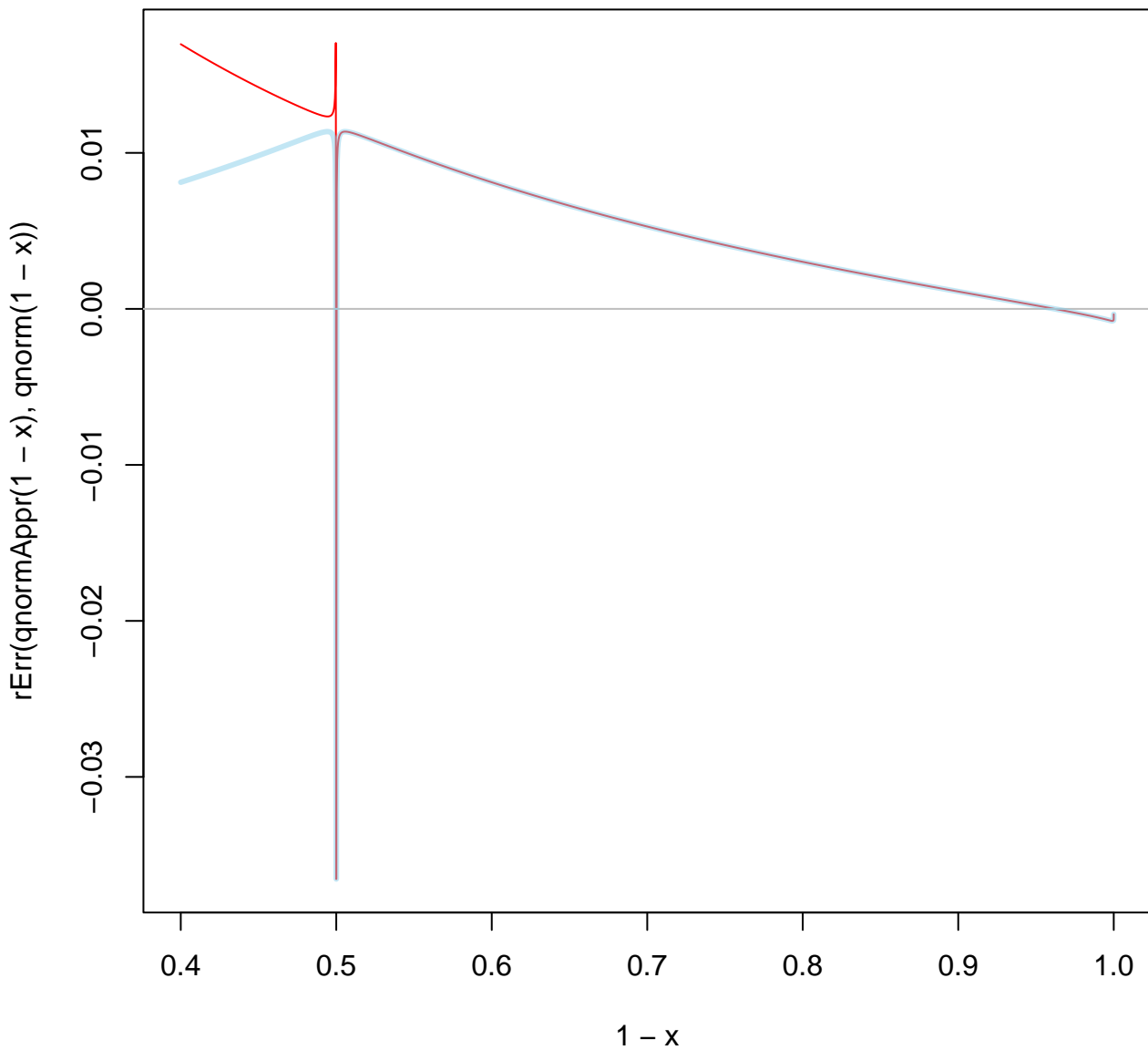
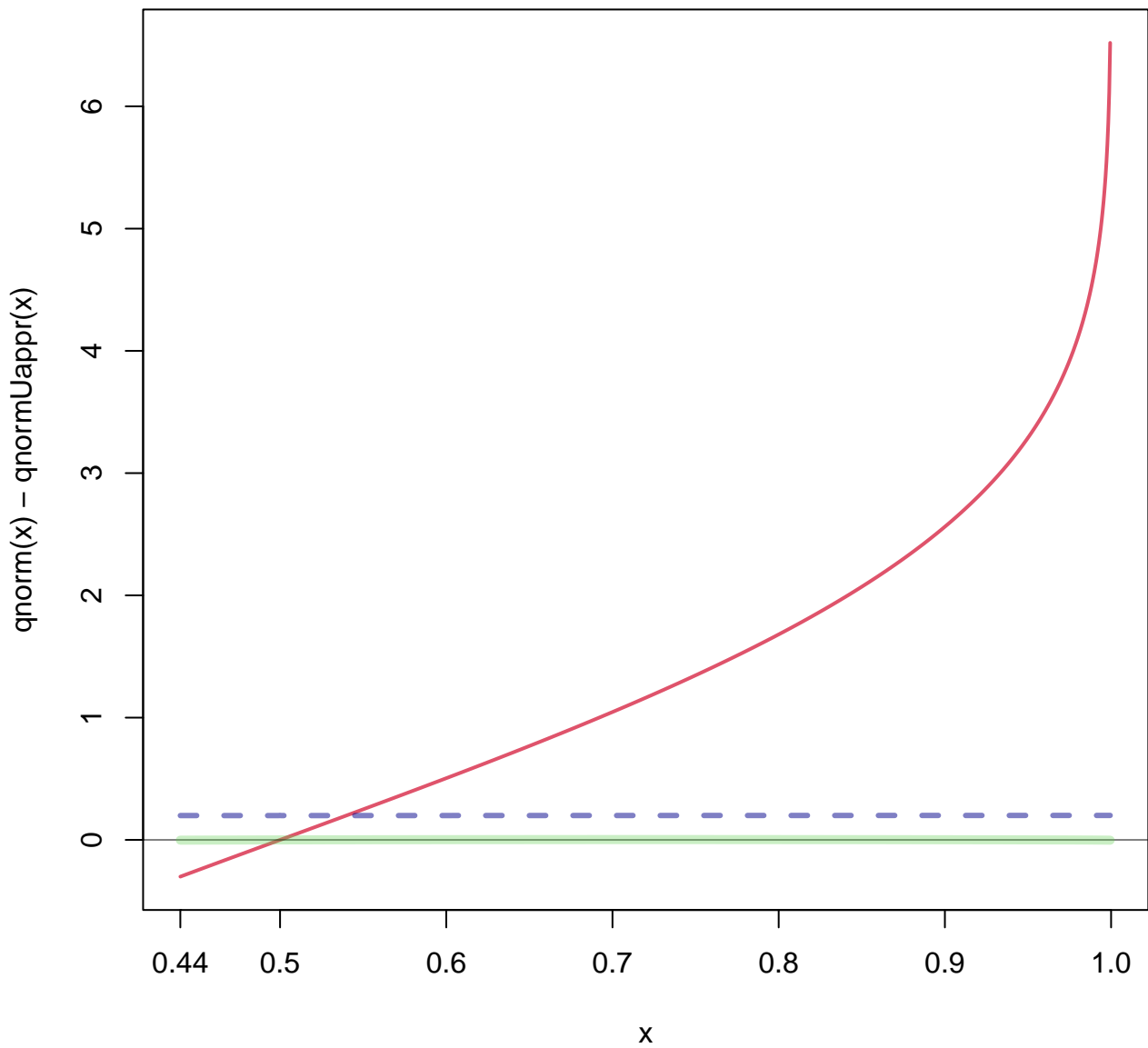
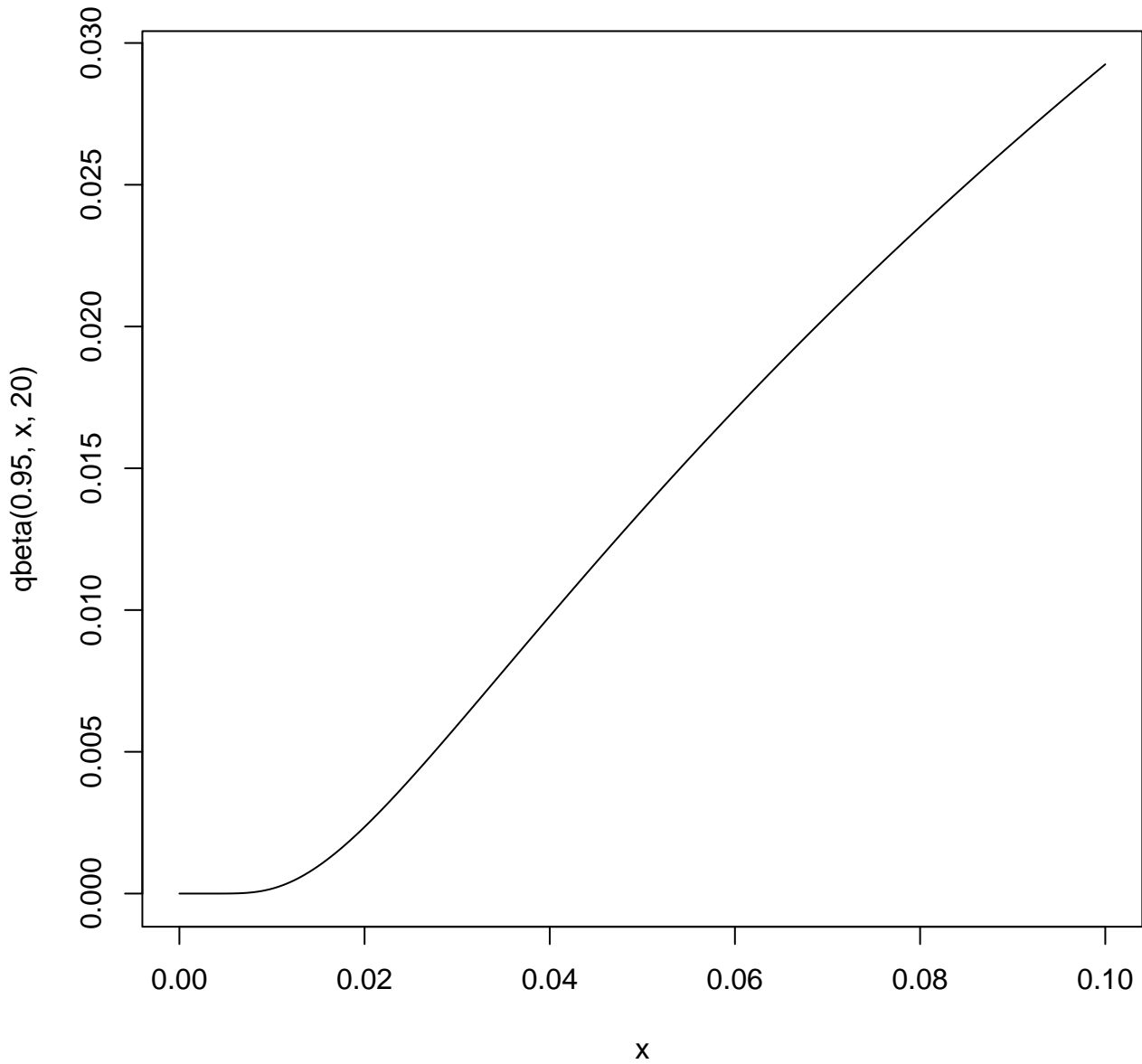
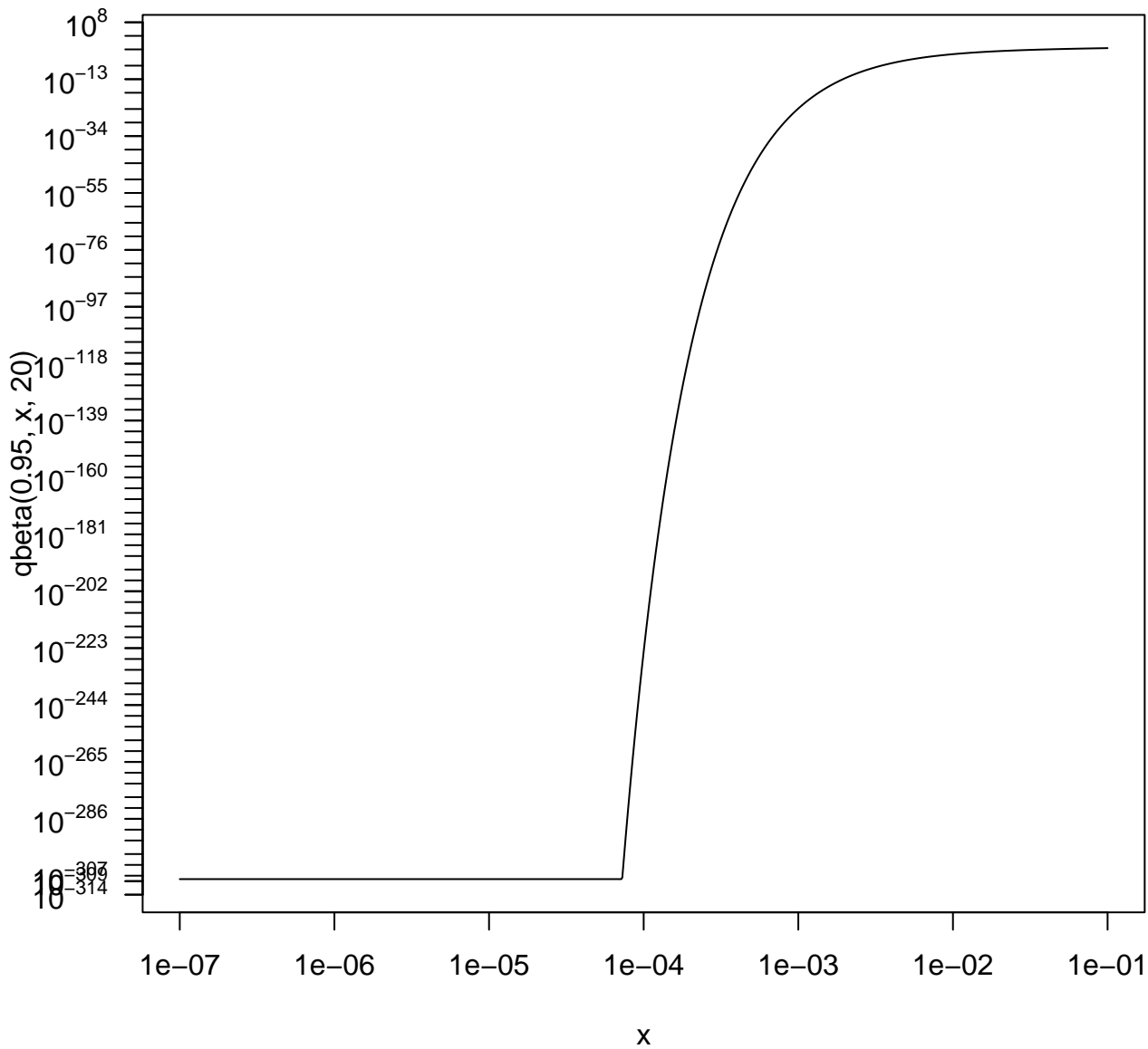


# Rel. Error of 'qnormAppr(1-x)'

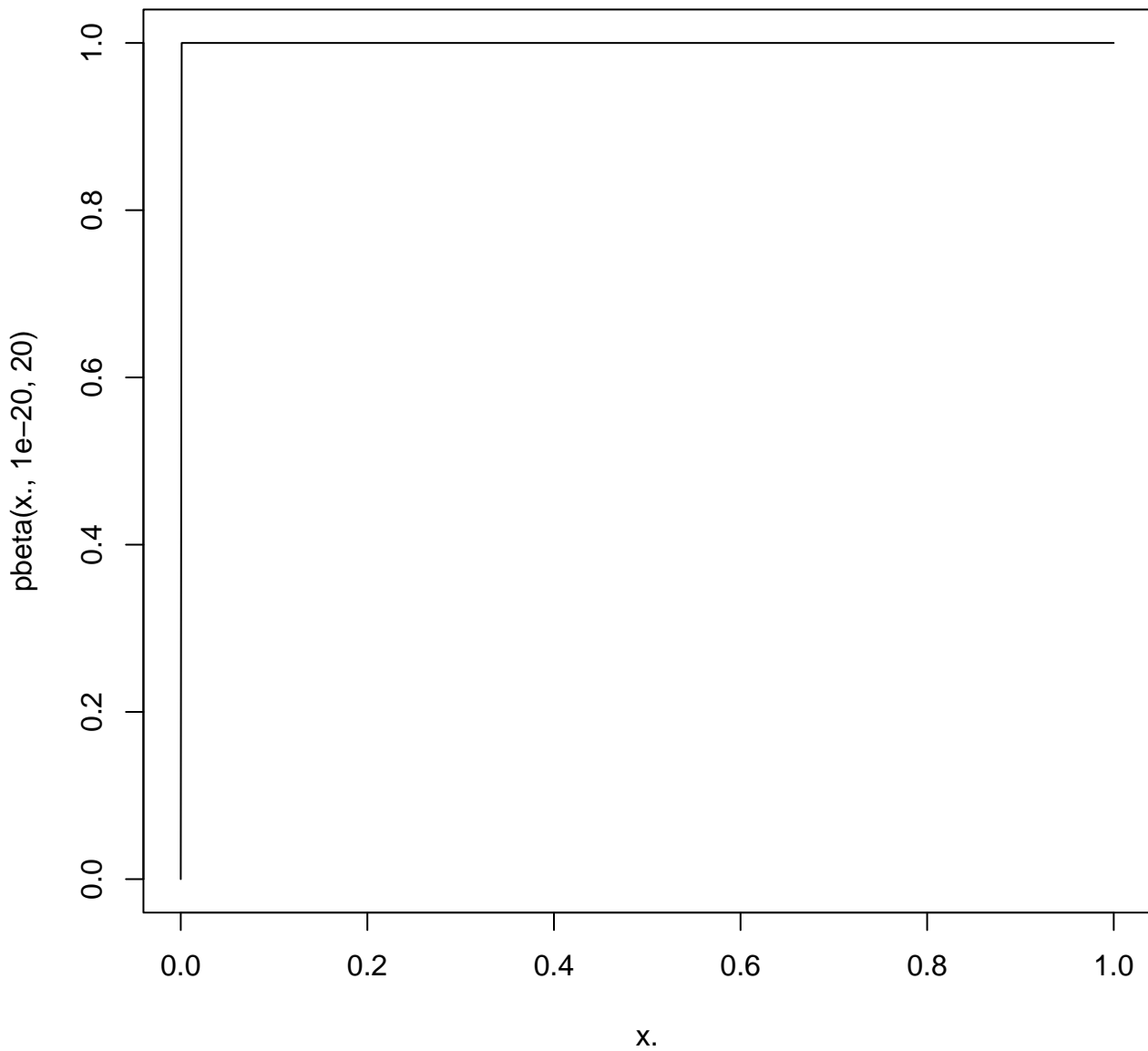


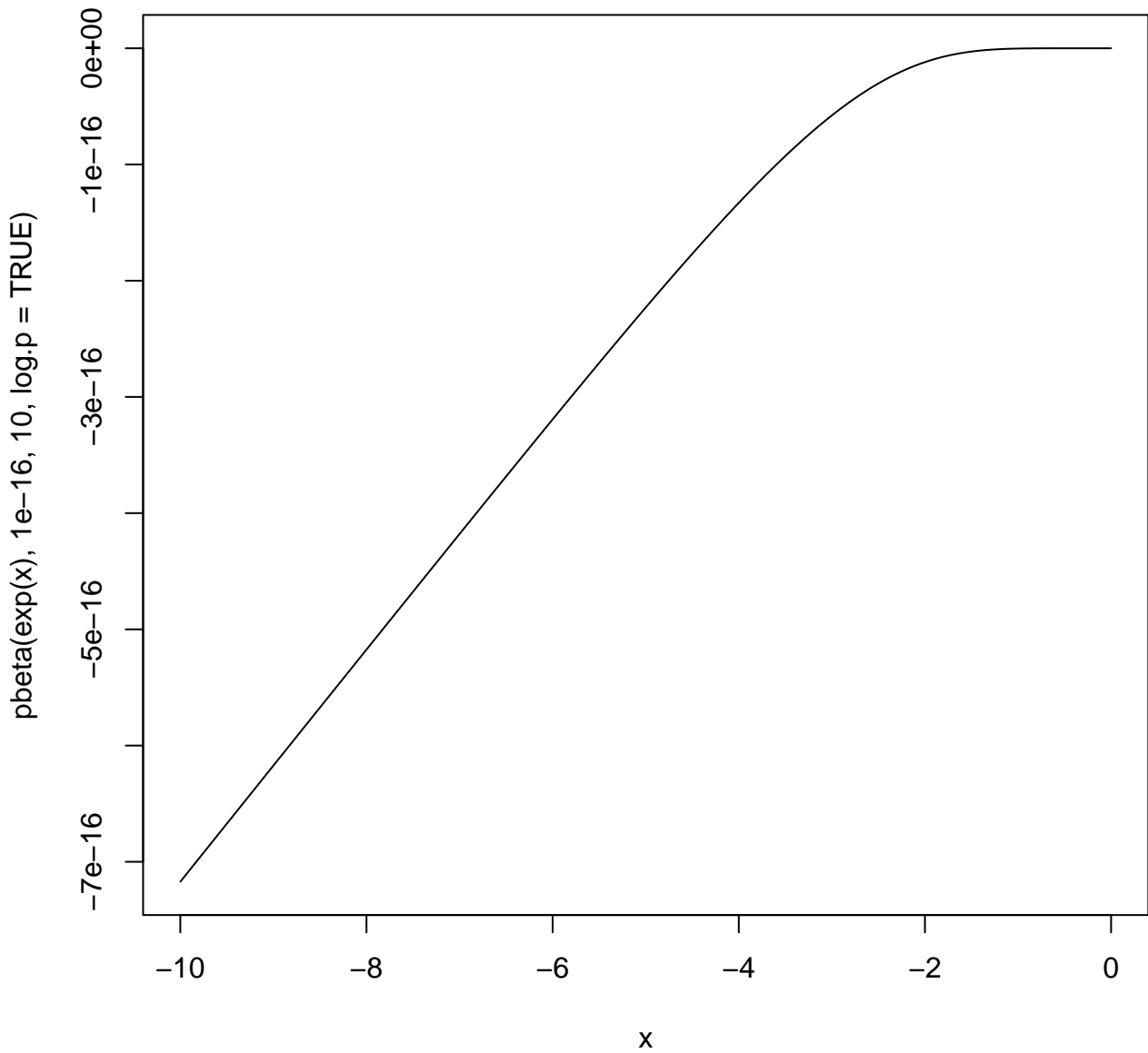


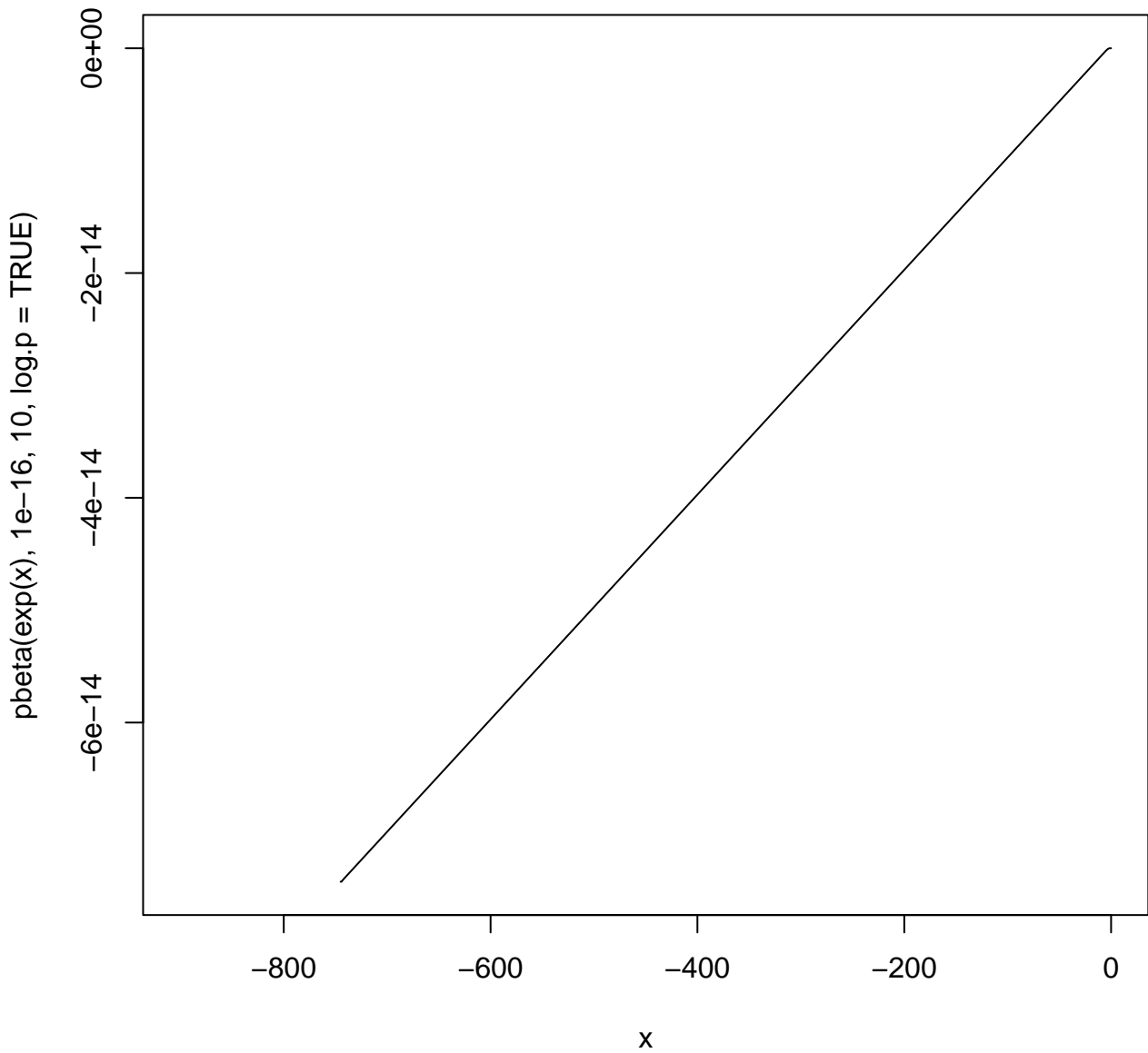




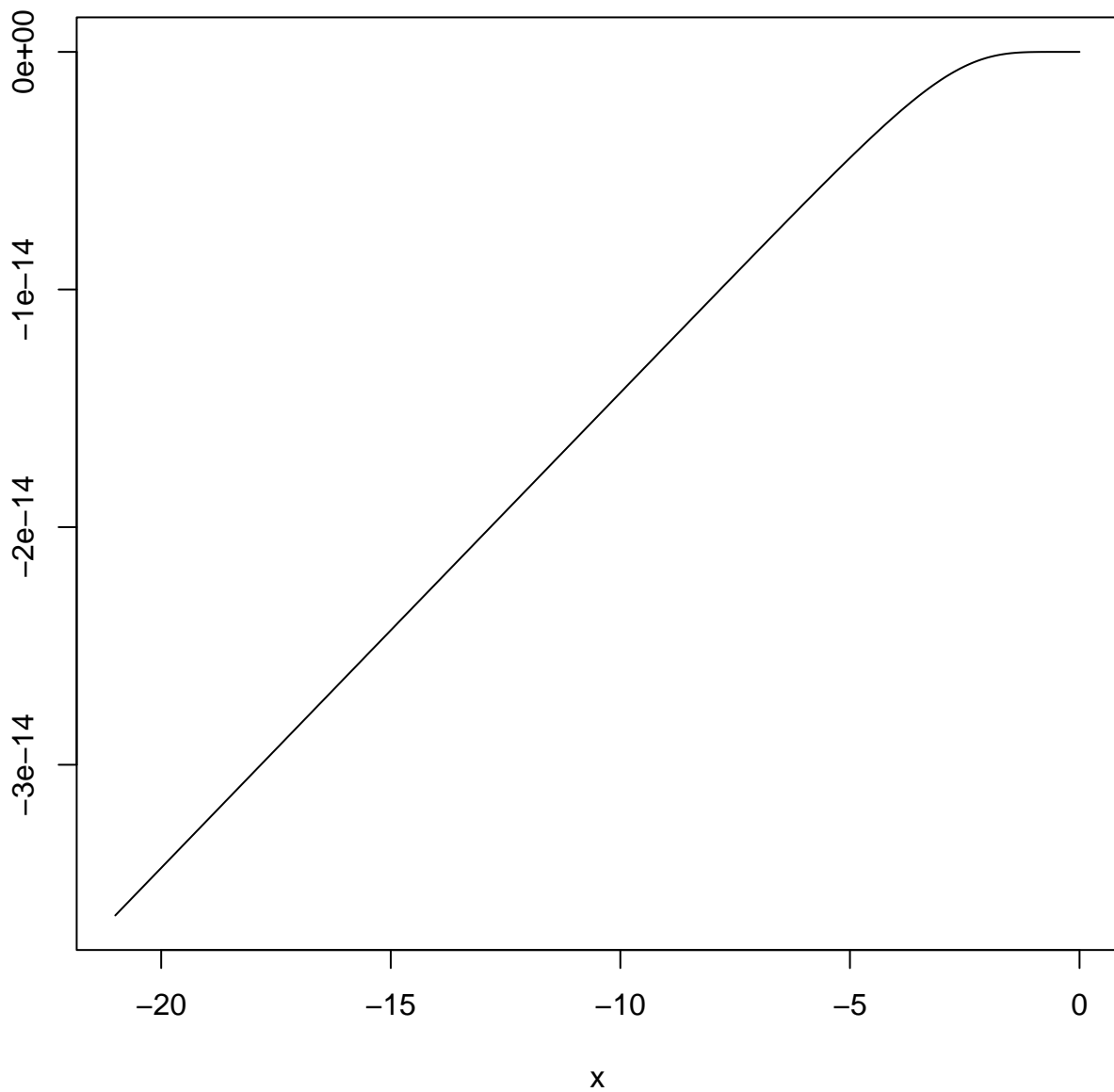




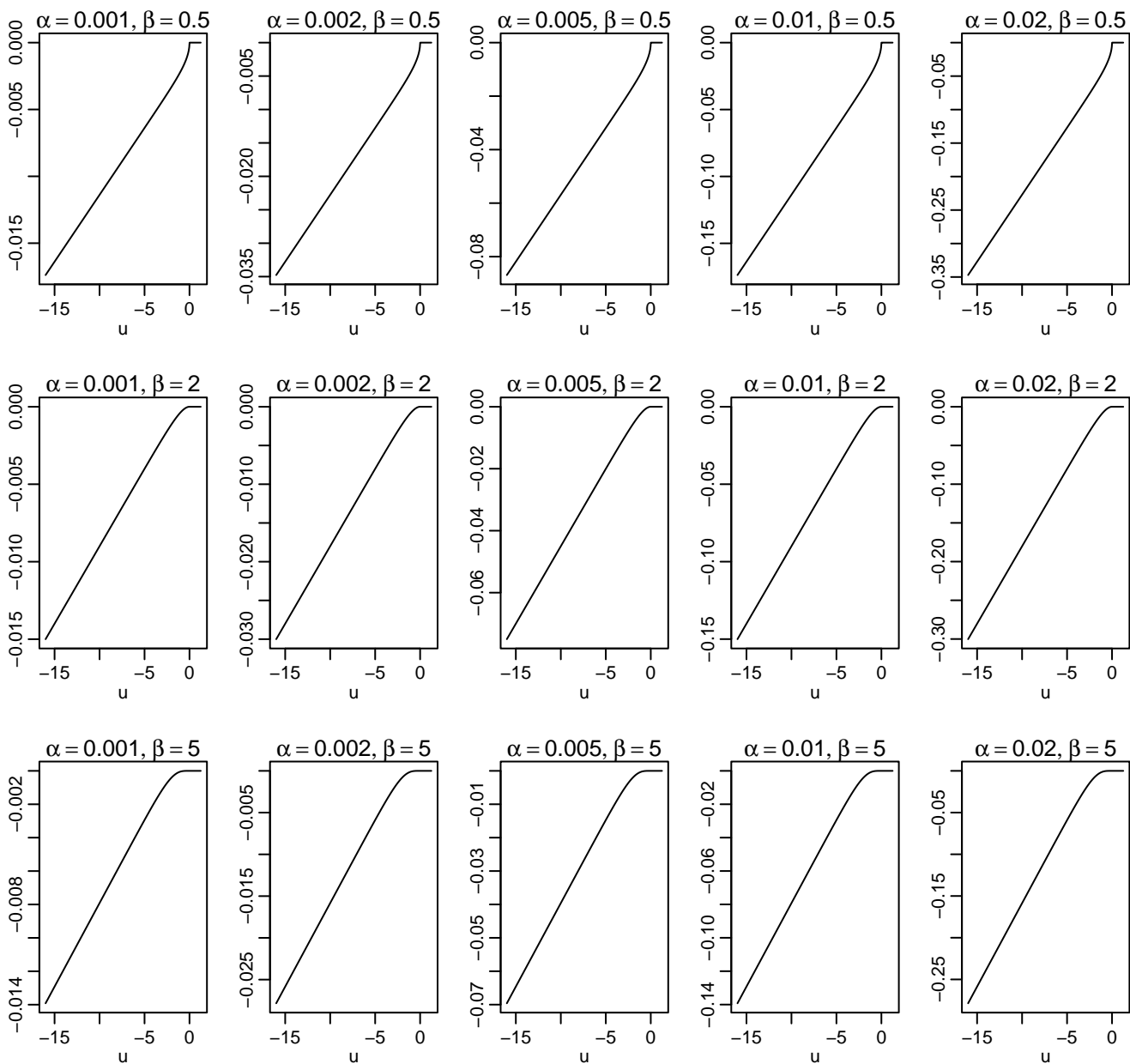


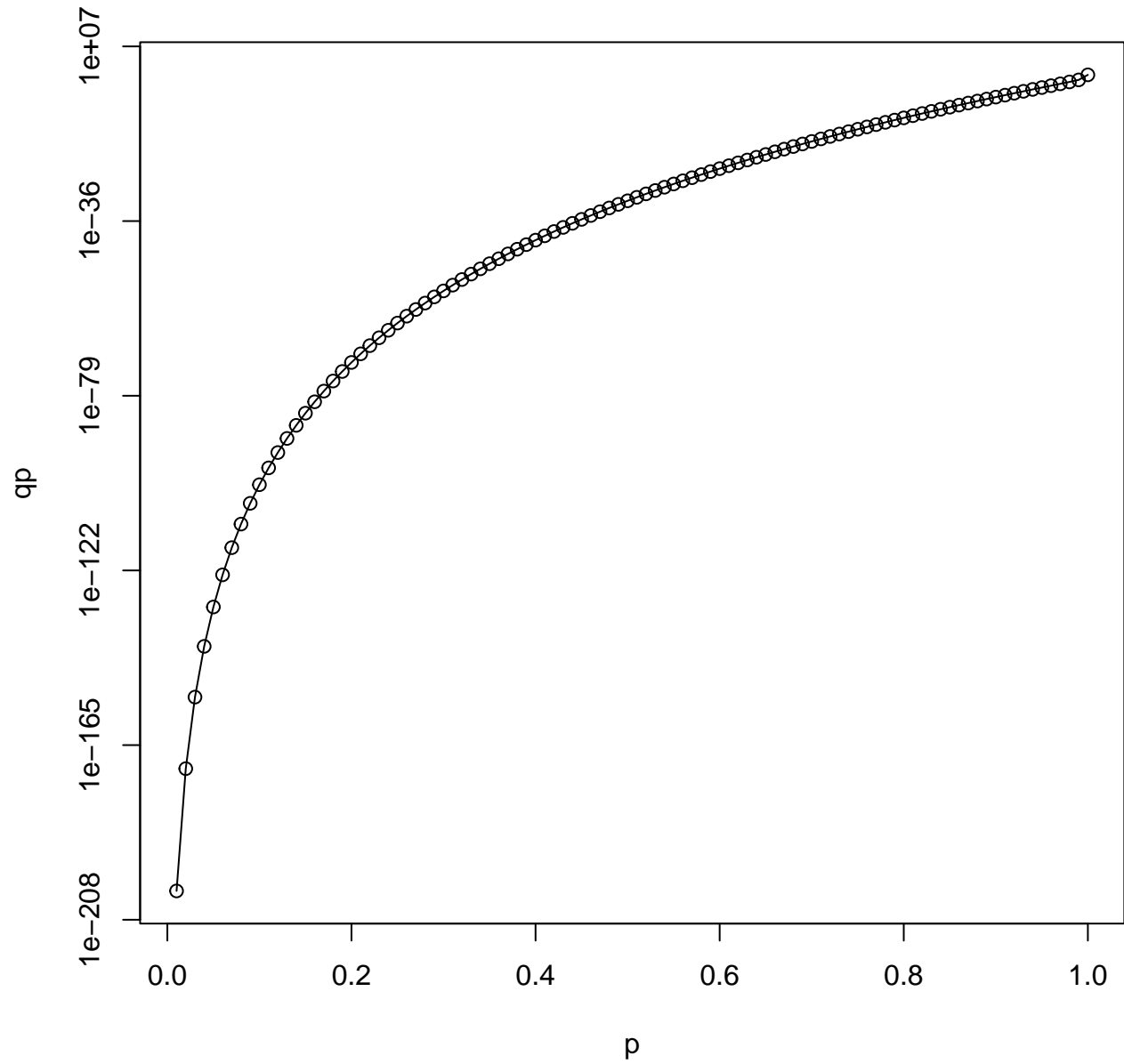


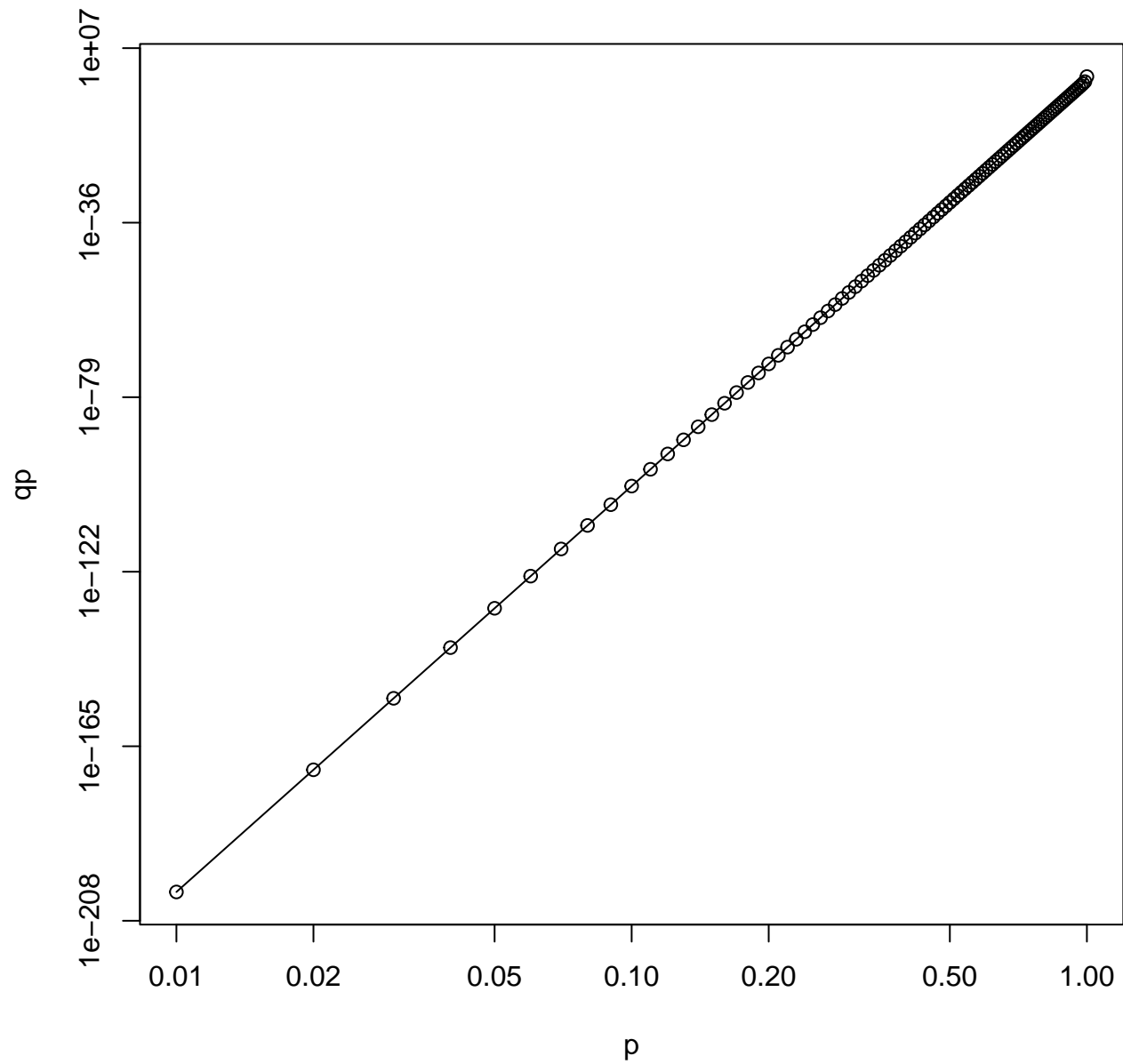
$p\beta(\exp(x), 2e-15, 10, \log.p = \text{TRUE})$

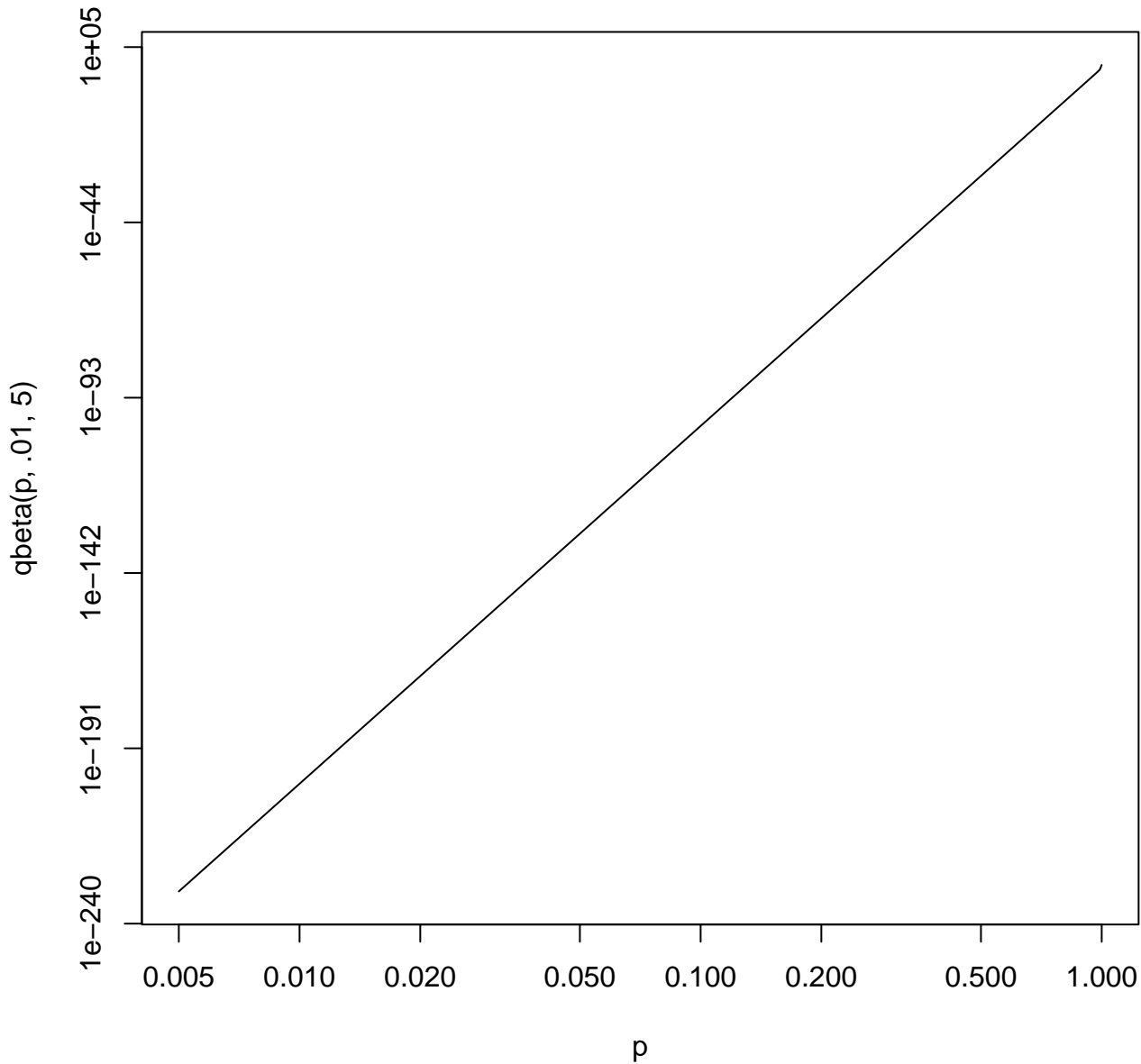


# $\text{pbeta}(e^u, \alpha, \beta, \log = \text{TRUE})$



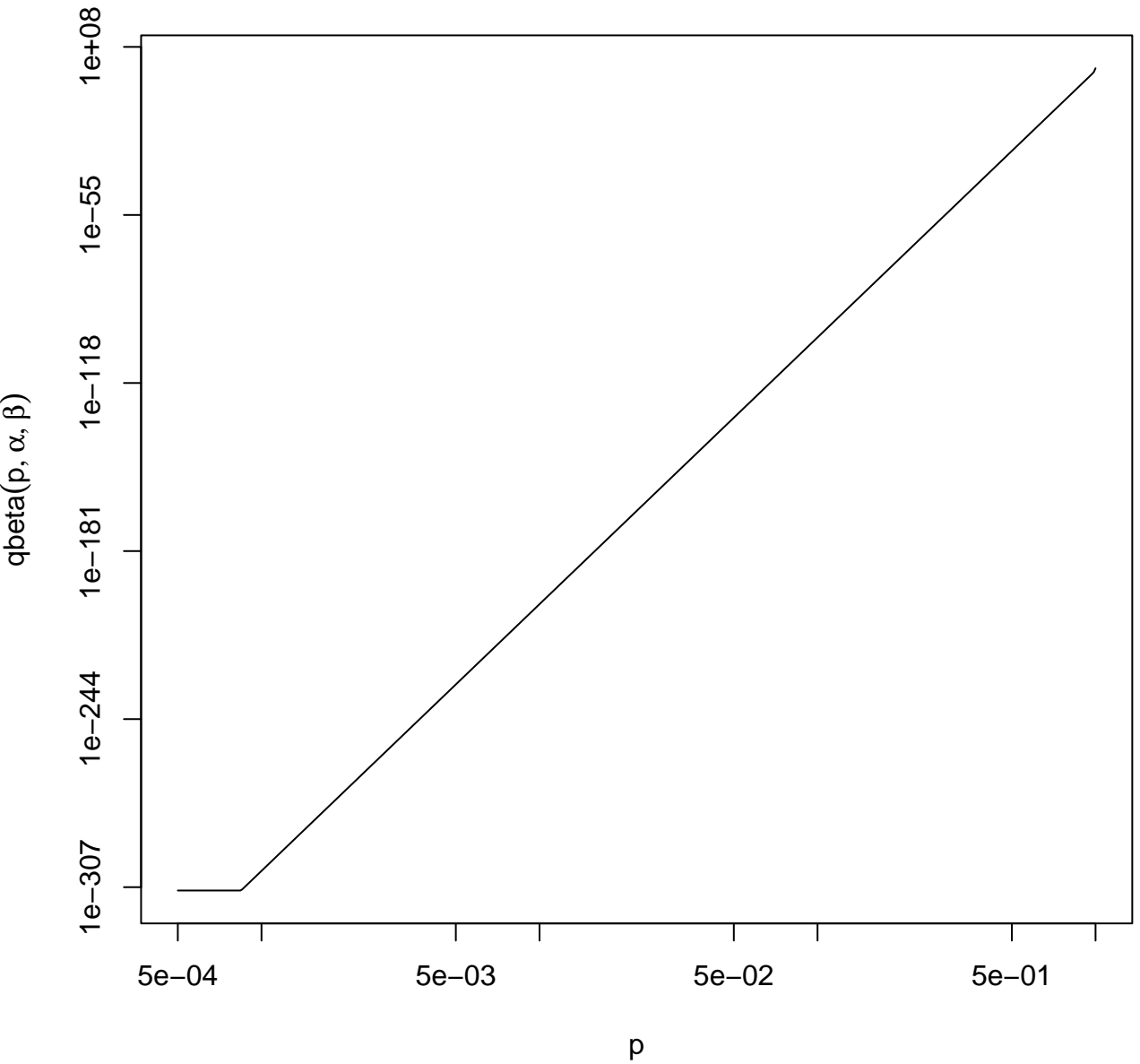




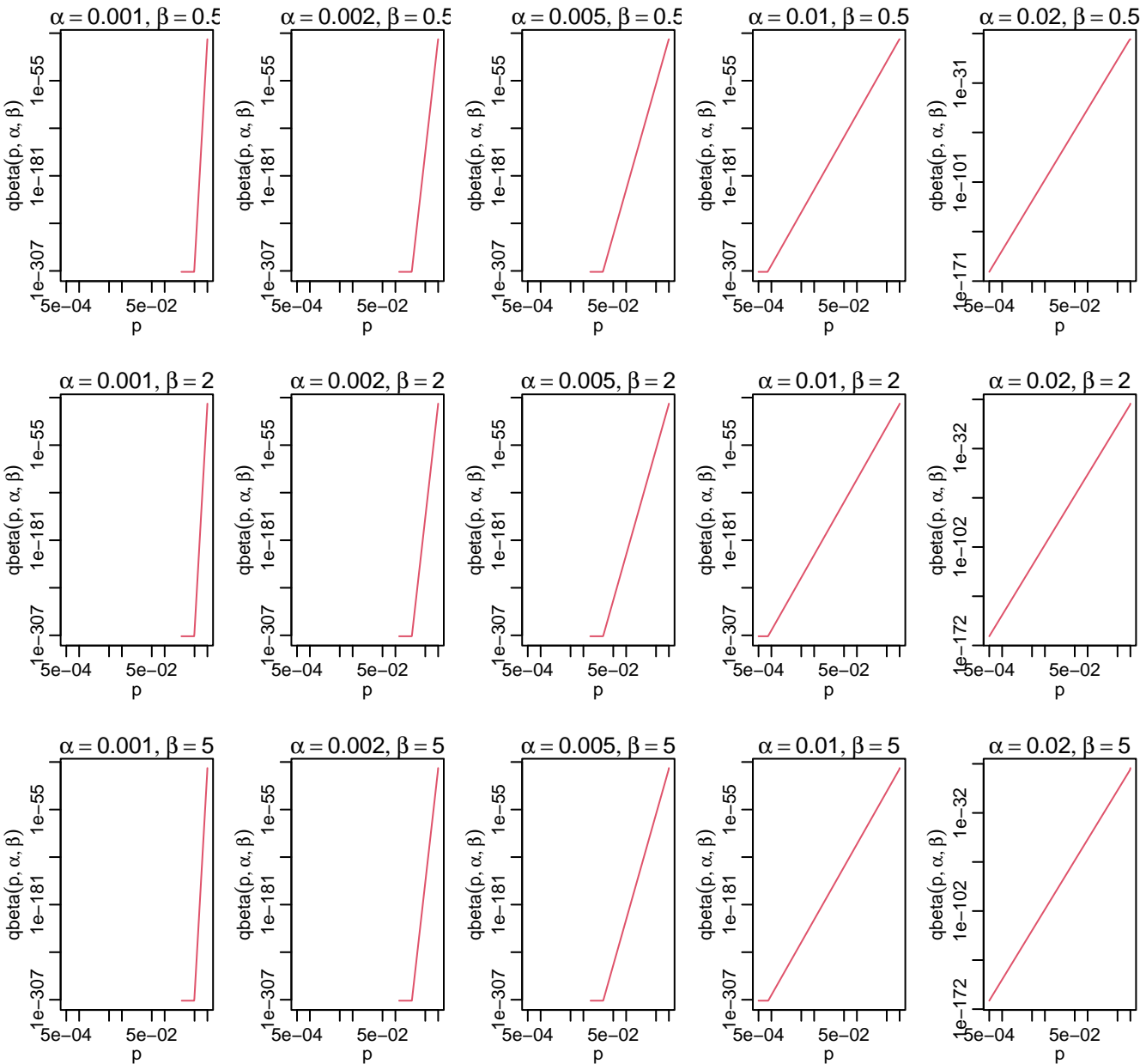




$\alpha = 0.01, \beta = 5$

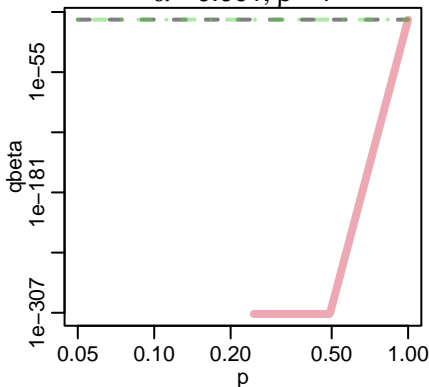


# qbeta(p, <small>, .) vs p for $p \rightarrow 0$

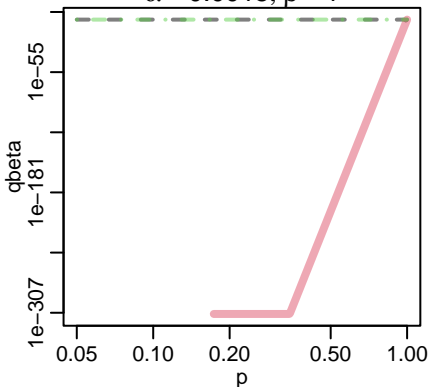


# qbeta(p, $\alpha$ , $\beta$ ) for small $\alpha$ and $p \downarrow 0$

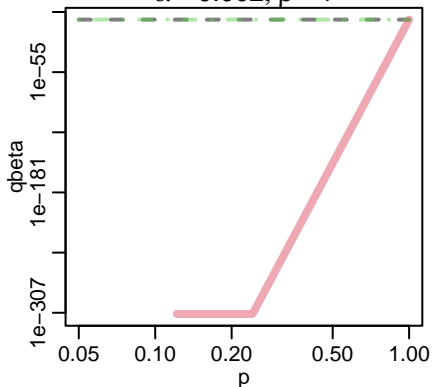
$\alpha = 0.001, \beta = 1$



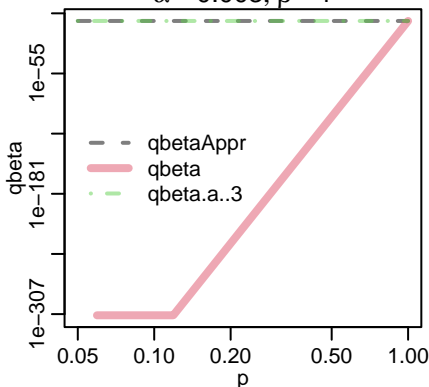
$\alpha = 0.0015, \beta = 1$



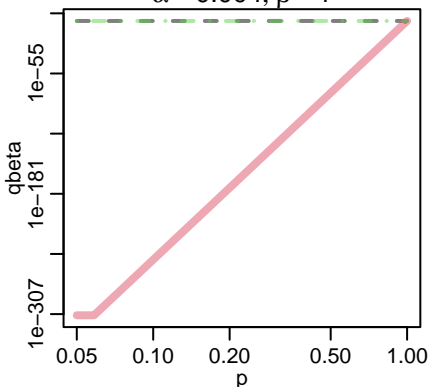
$\alpha = 0.002, \beta = 1$



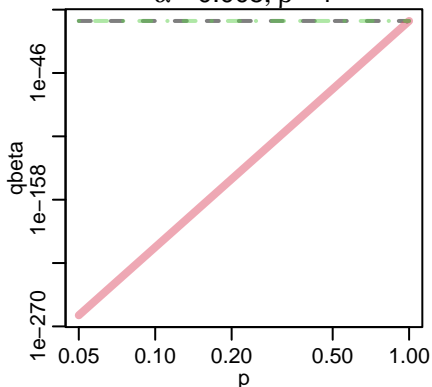
$\alpha = 0.003, \beta = 1$



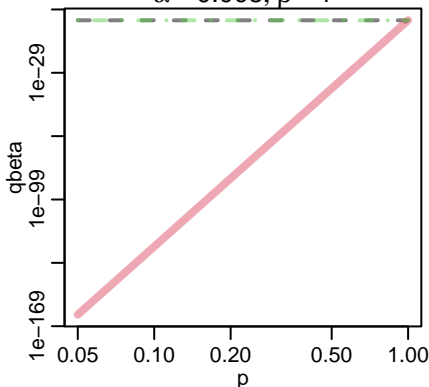
$\alpha = 0.004, \beta = 1$



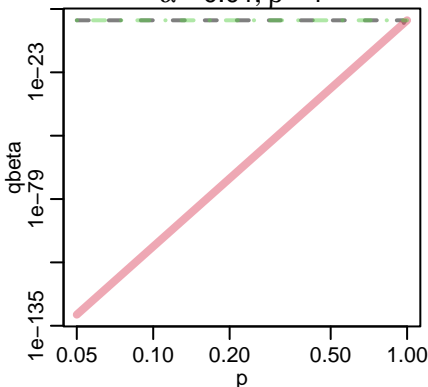
$\alpha = 0.005, \beta = 1$



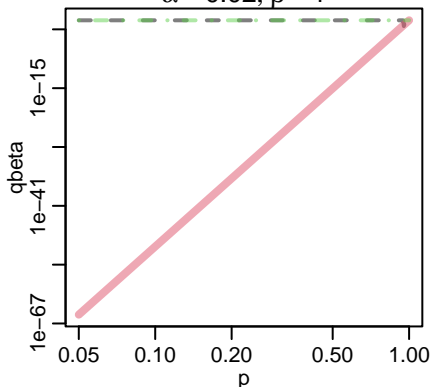
$\alpha = 0.008, \beta = 1$



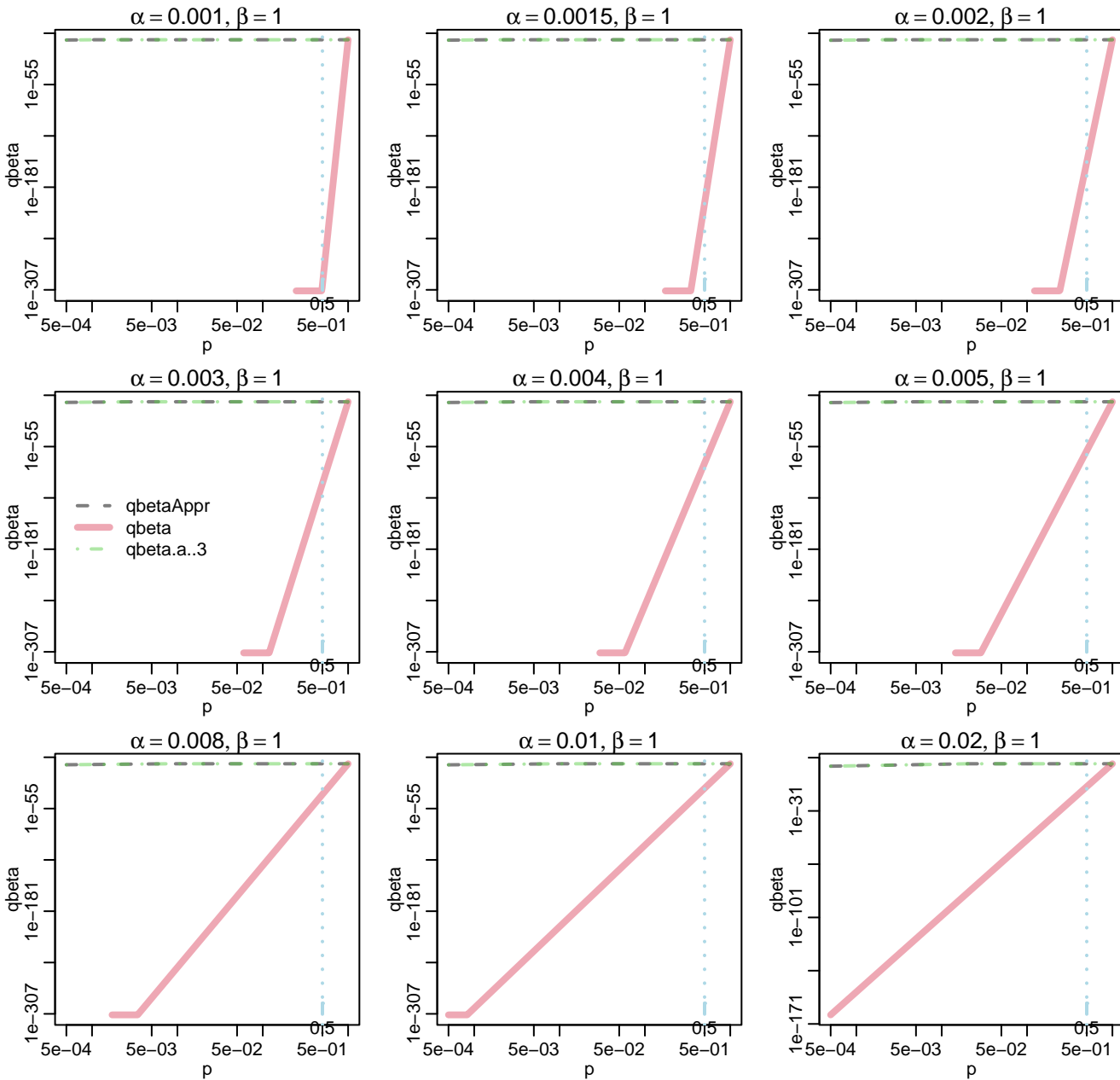
$\alpha = 0.01, \beta = 1$



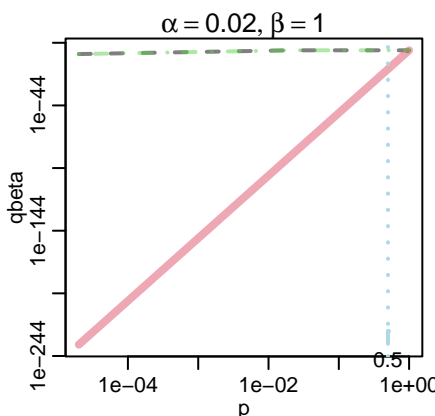
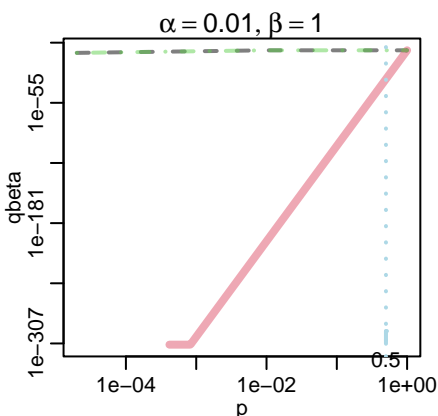
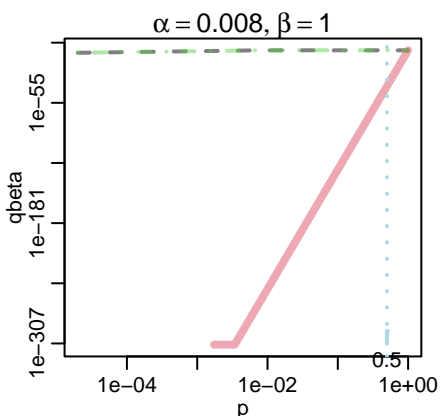
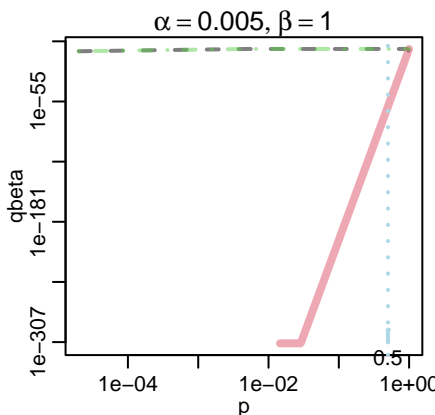
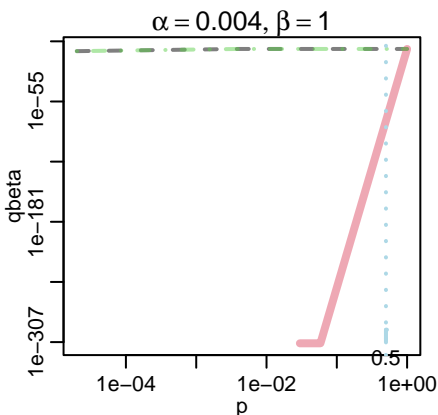
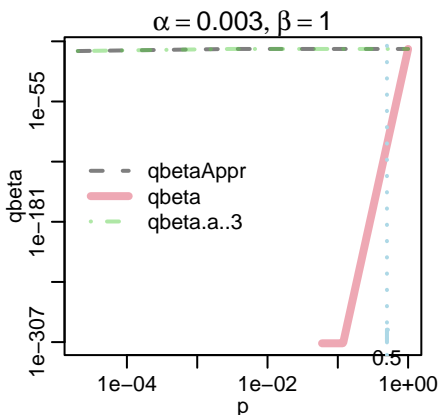
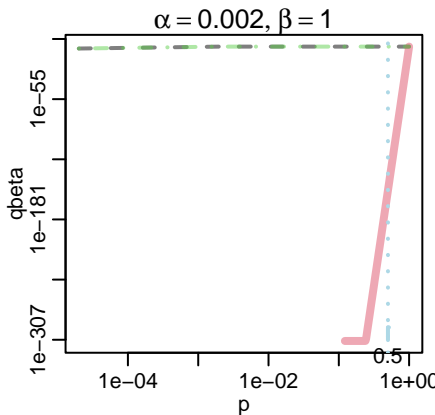
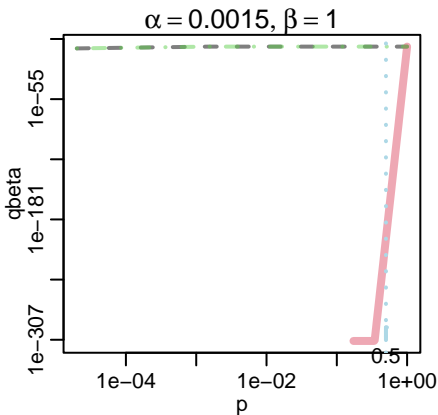
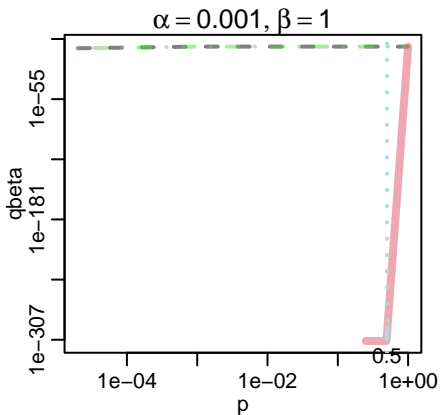
$\alpha = 0.02, \beta = 1$



# qbeta(p, $\alpha$ , $\beta$ ) for small $\alpha$ and $p \downarrow 0$

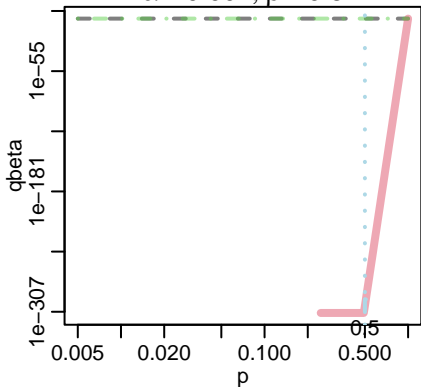


# qbeta(p, $\alpha$ , $\beta$ ) for small $\alpha$ and $p \downarrow 0$

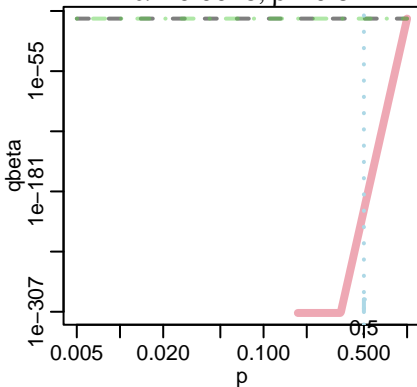


# qbeta(p, $\alpha$ , $\beta$ ) for small $\alpha$ and $p \downarrow 0$

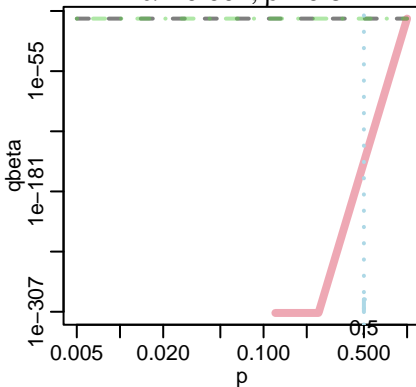
$\alpha = 0.001, \beta = 0.8$



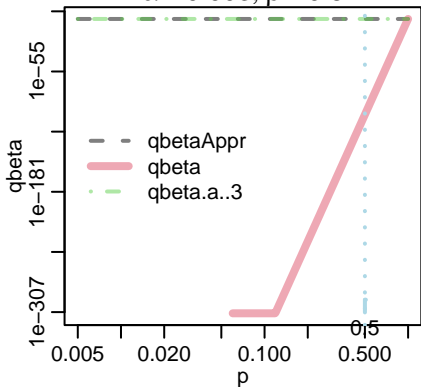
$\alpha = 0.0015, \beta = 0.8$



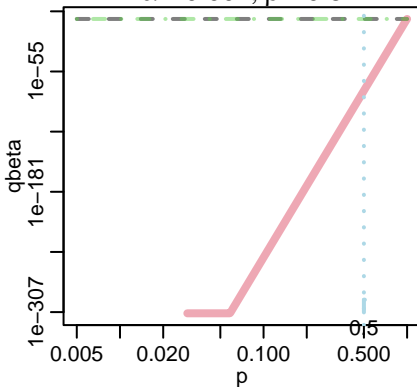
$\alpha = 0.002, \beta = 0.8$



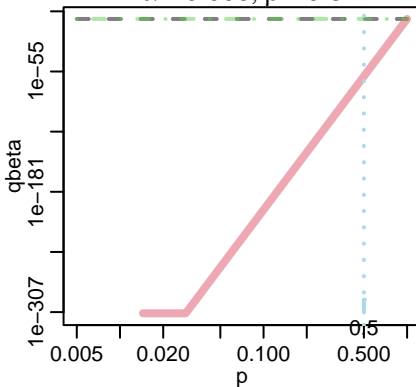
$\alpha = 0.003, \beta = 0.8$



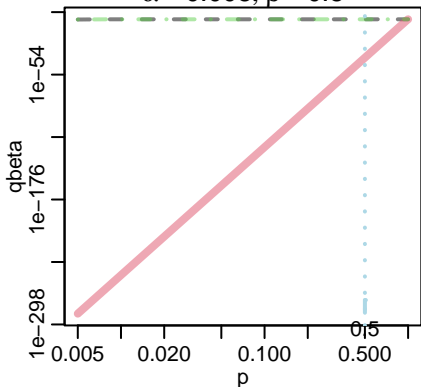
$\alpha = 0.004, \beta = 0.8$



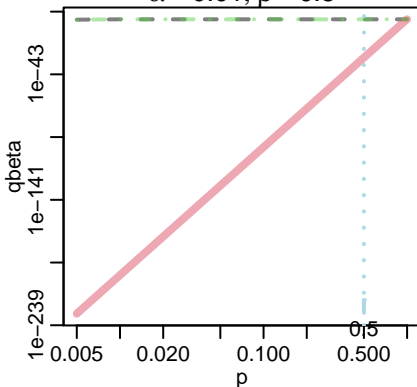
$\alpha = 0.005, \beta = 0.8$



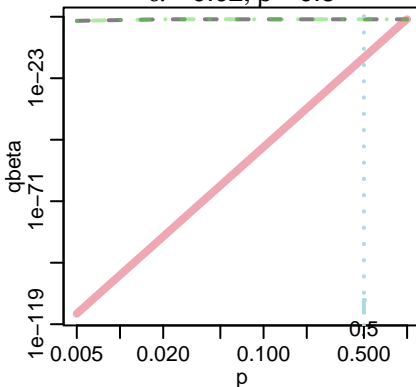
$\alpha = 0.008, \beta = 0.8$



$\alpha = 0.01, \beta = 0.8$

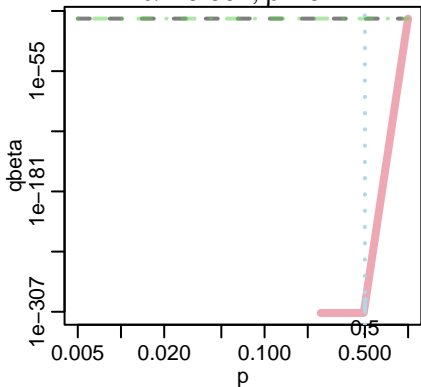


$\alpha = 0.02, \beta = 0.8$

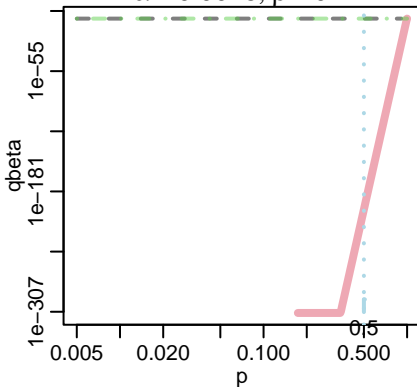


# qbeta(p, $\alpha$ , $\beta$ ) for small $\alpha$ and $p \downarrow 0$

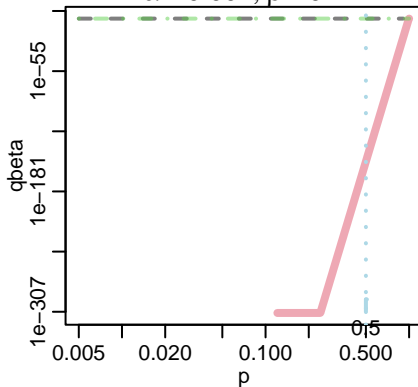
$\alpha = 0.001, \beta = 0.4$



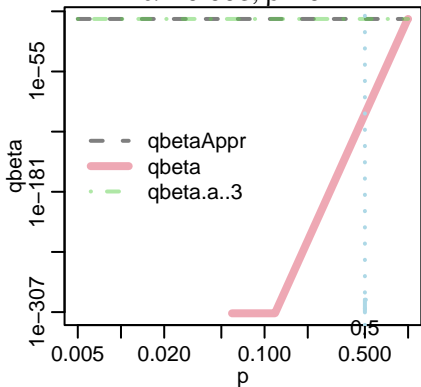
$\alpha = 0.0015, \beta = 0.4$



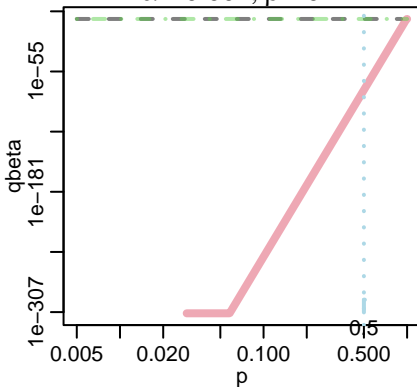
$\alpha = 0.002, \beta = 0.4$



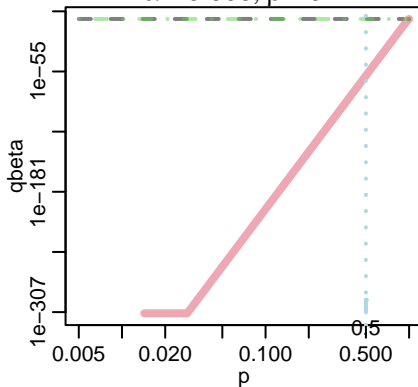
$\alpha = 0.003, \beta = 0.4$



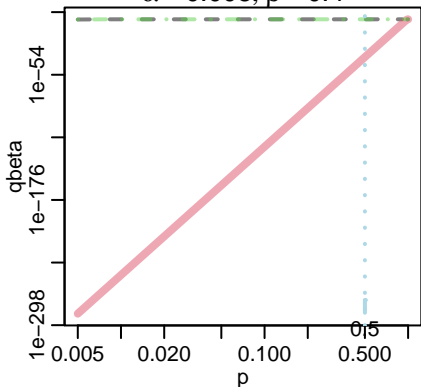
$\alpha = 0.004, \beta = 0.4$



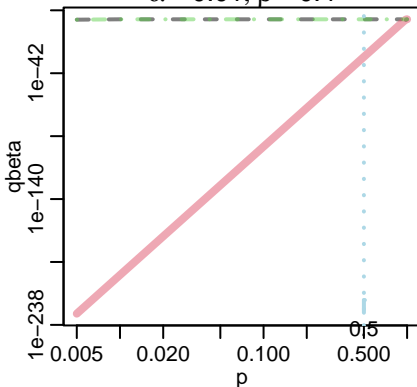
$\alpha = 0.005, \beta = 0.4$



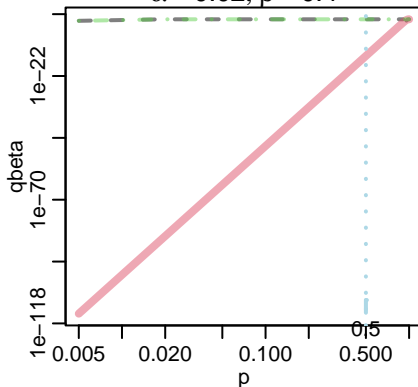
$\alpha = 0.008, \beta = 0.4$



$\alpha = 0.01, \beta = 0.4$

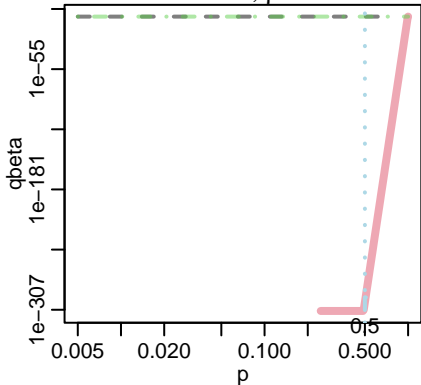


$\alpha = 0.02, \beta = 0.4$

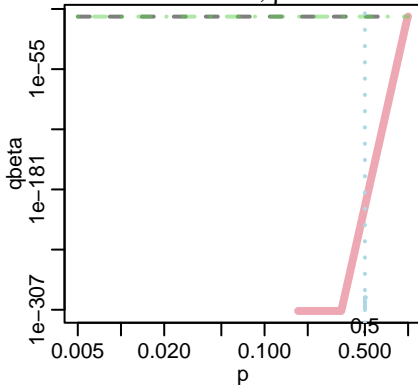


# qbeta(p, $\alpha$ , $\beta$ ) for small $\alpha$ and $p \downarrow 0$

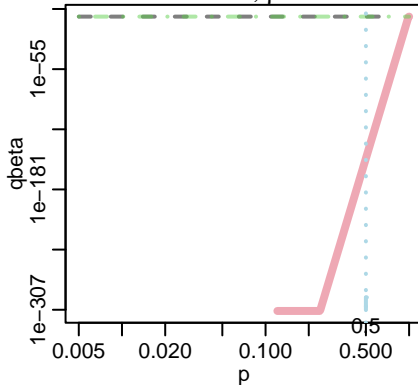
$\alpha = 0.001, \beta = 0.2$



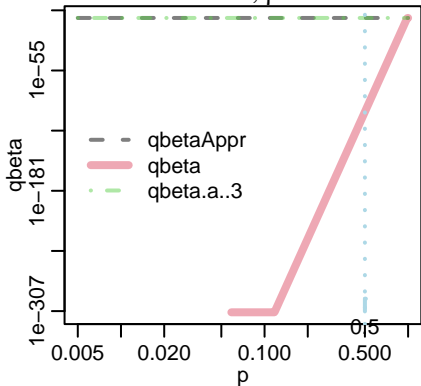
$\alpha = 0.0015, \beta = 0.2$



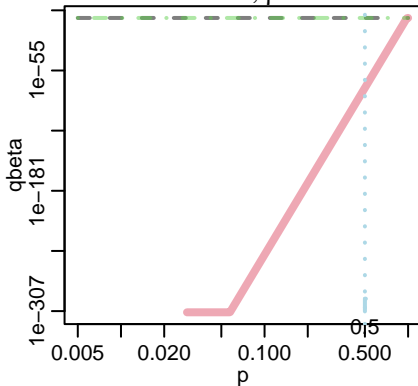
$\alpha = 0.002, \beta = 0.2$



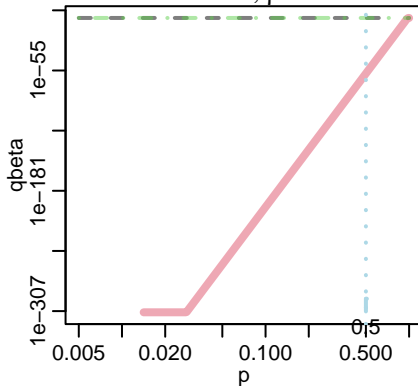
$\alpha = 0.003, \beta = 0.2$



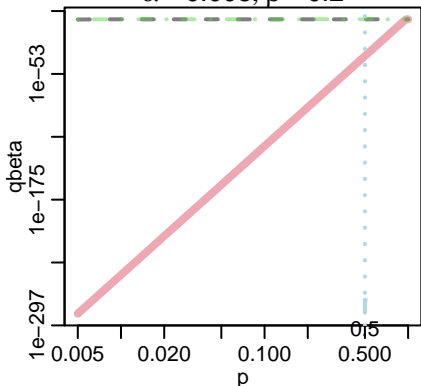
$\alpha = 0.004, \beta = 0.2$



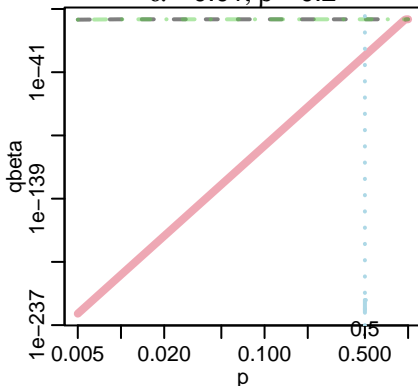
$\alpha = 0.005, \beta = 0.2$



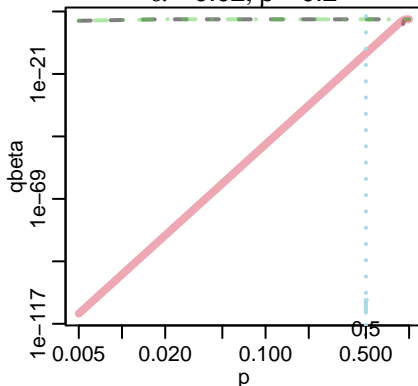
$\alpha = 0.008, \beta = 0.2$



$\alpha = 0.01, \beta = 0.2$

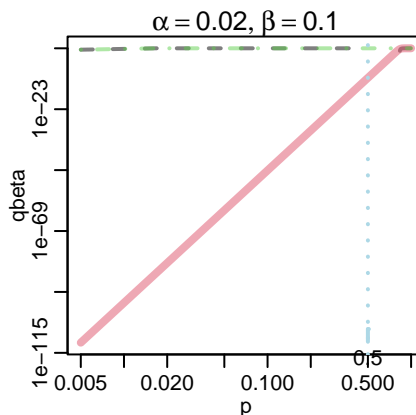
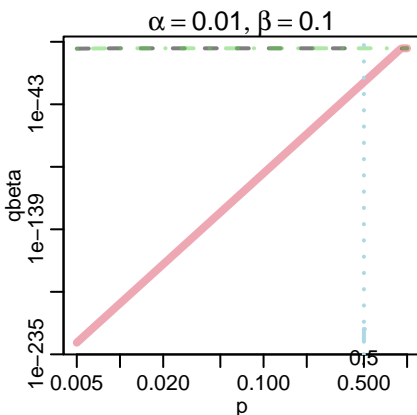
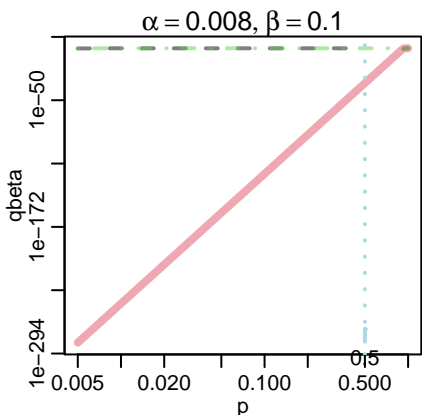
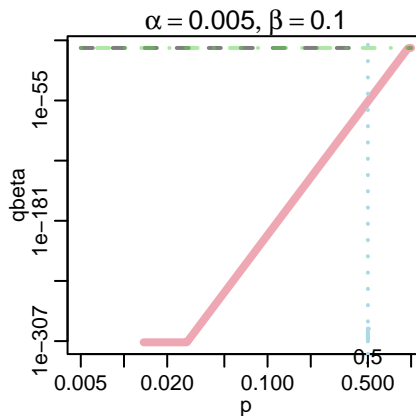
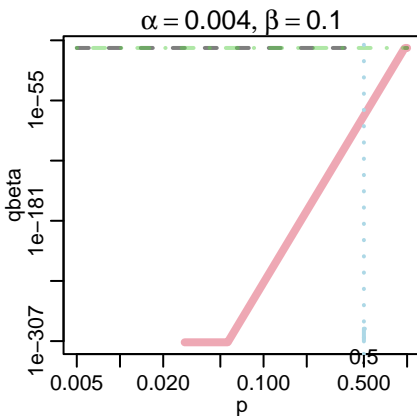
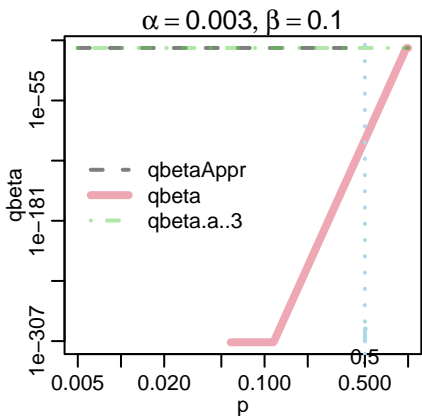
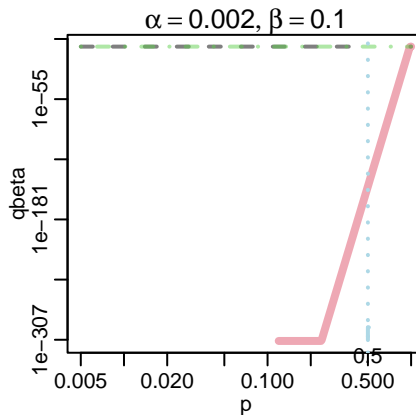
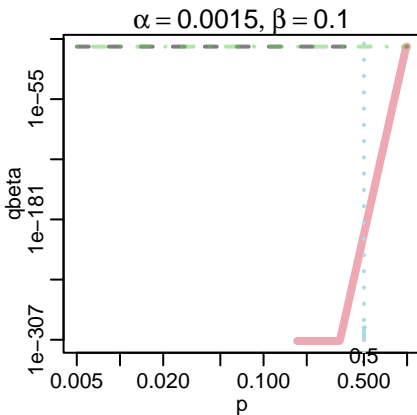
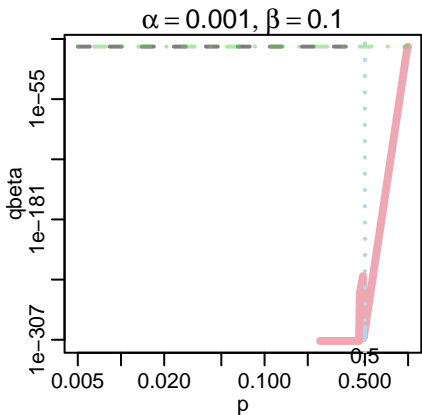


$\alpha = 0.02, \beta = 0.2$

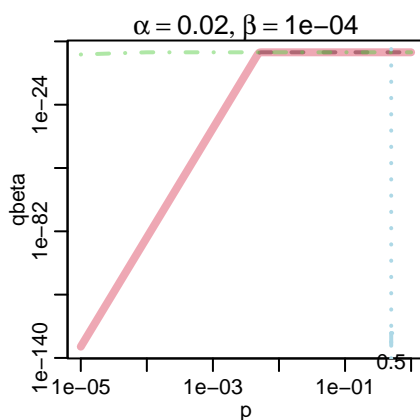
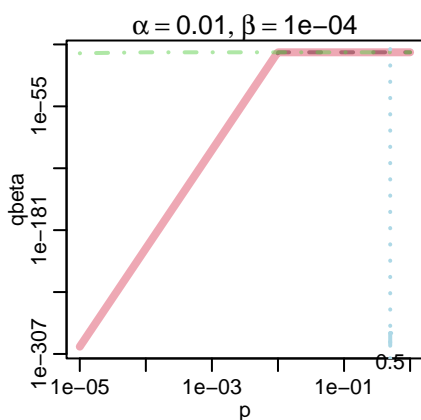
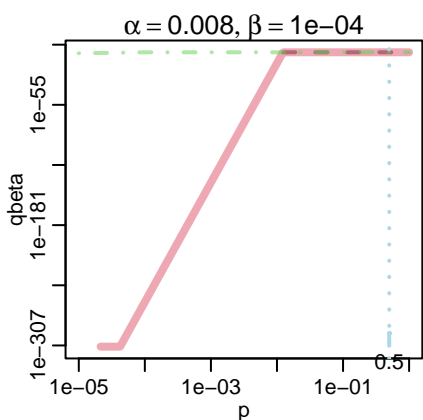
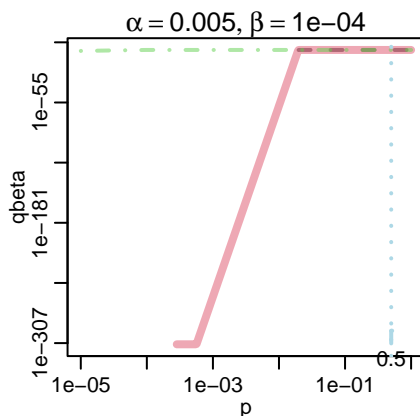
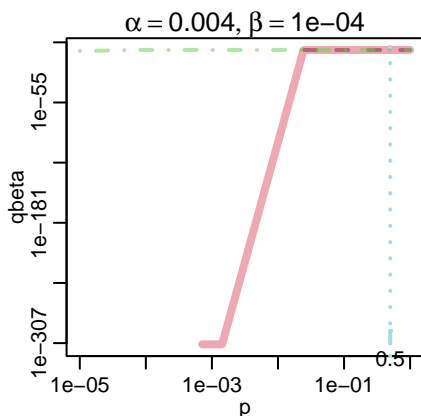
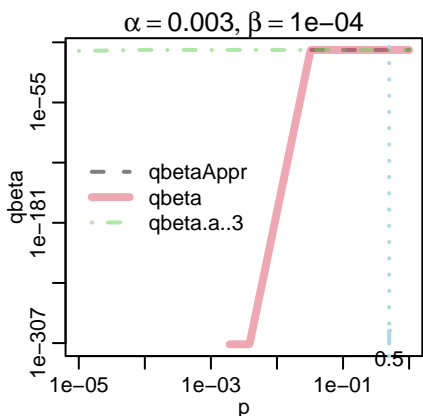
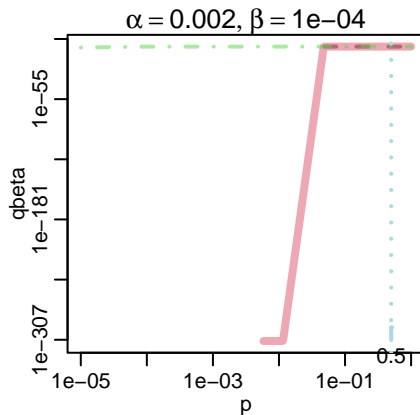
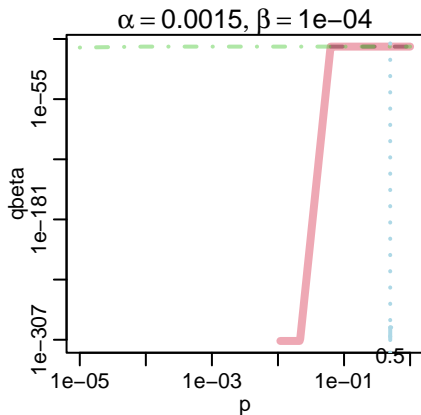
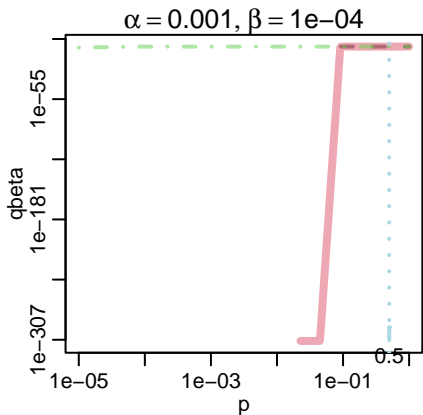




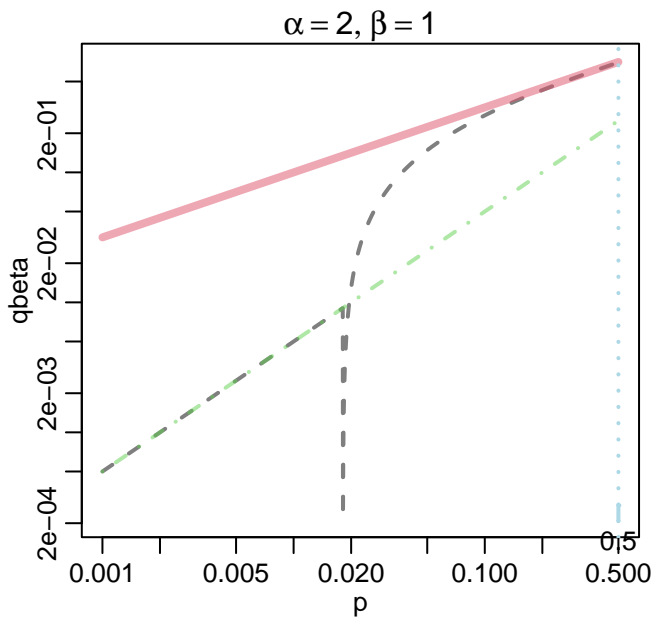
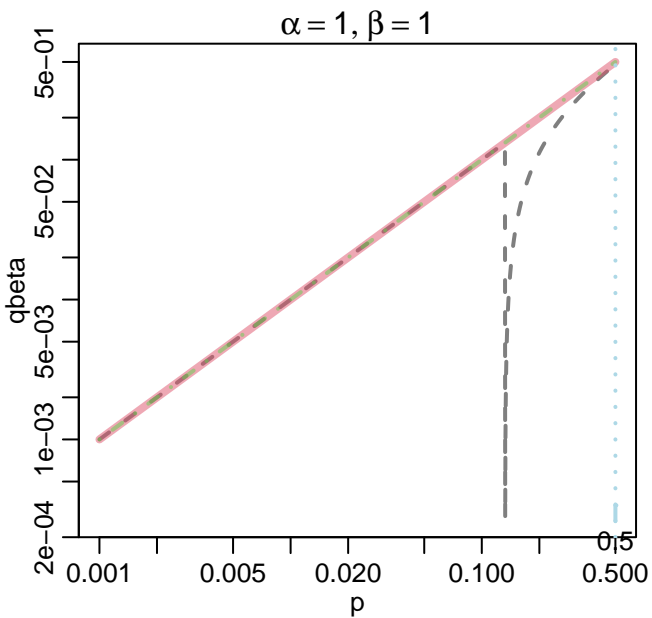
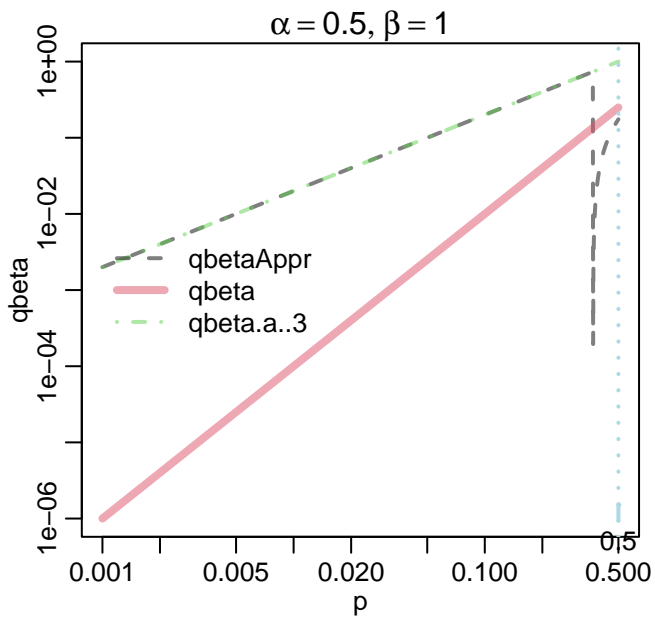
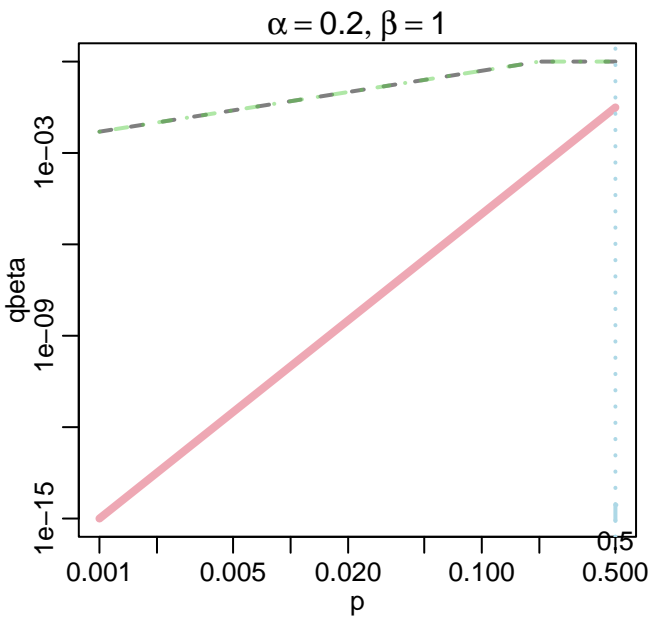
# qbeta(p, $\alpha$ , $\beta$ ) for small $\alpha$ and $p \downarrow 0$



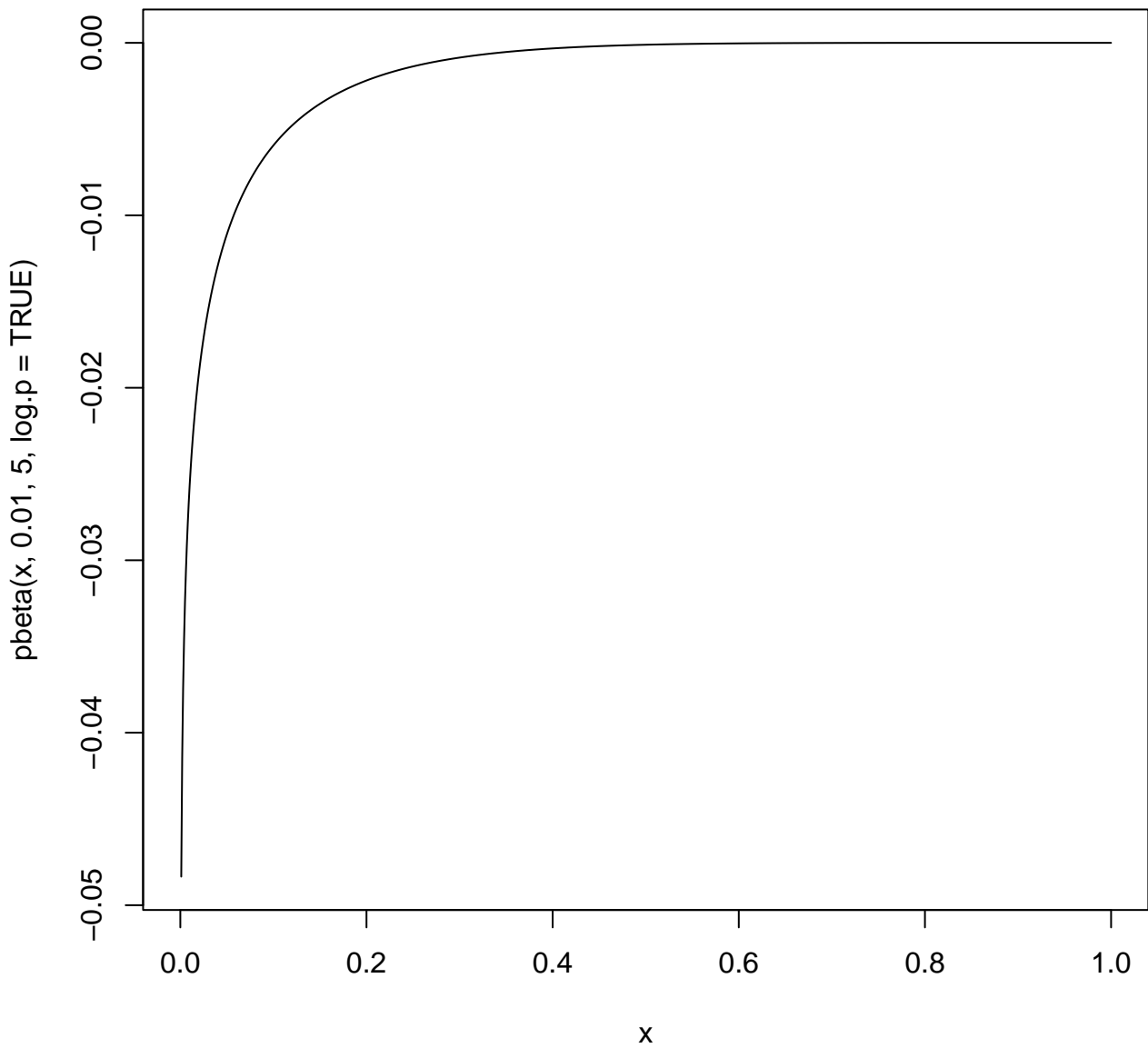
# qbeta(p, $\alpha$ , $\beta$ ) for small $\alpha$ and $p \downarrow 0$

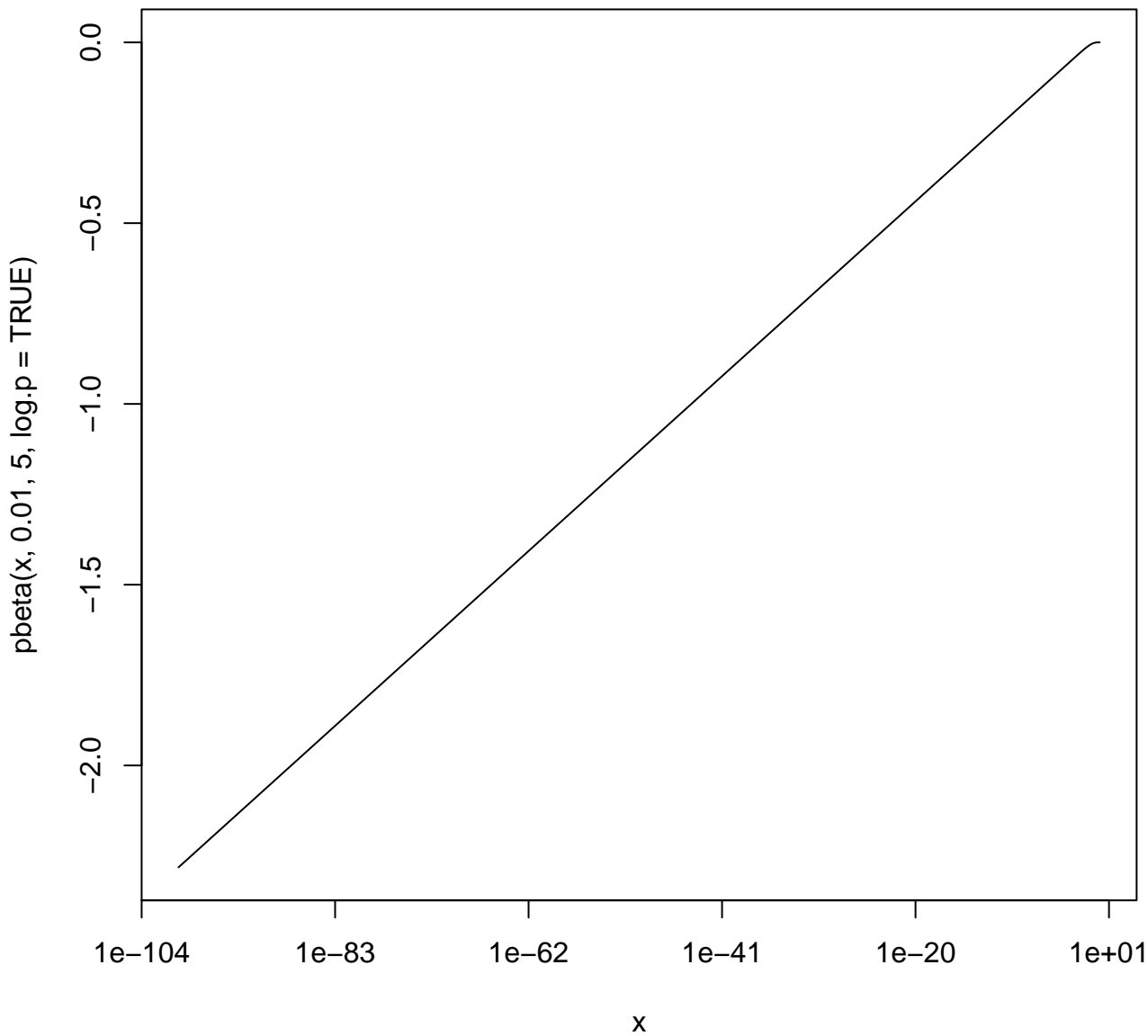


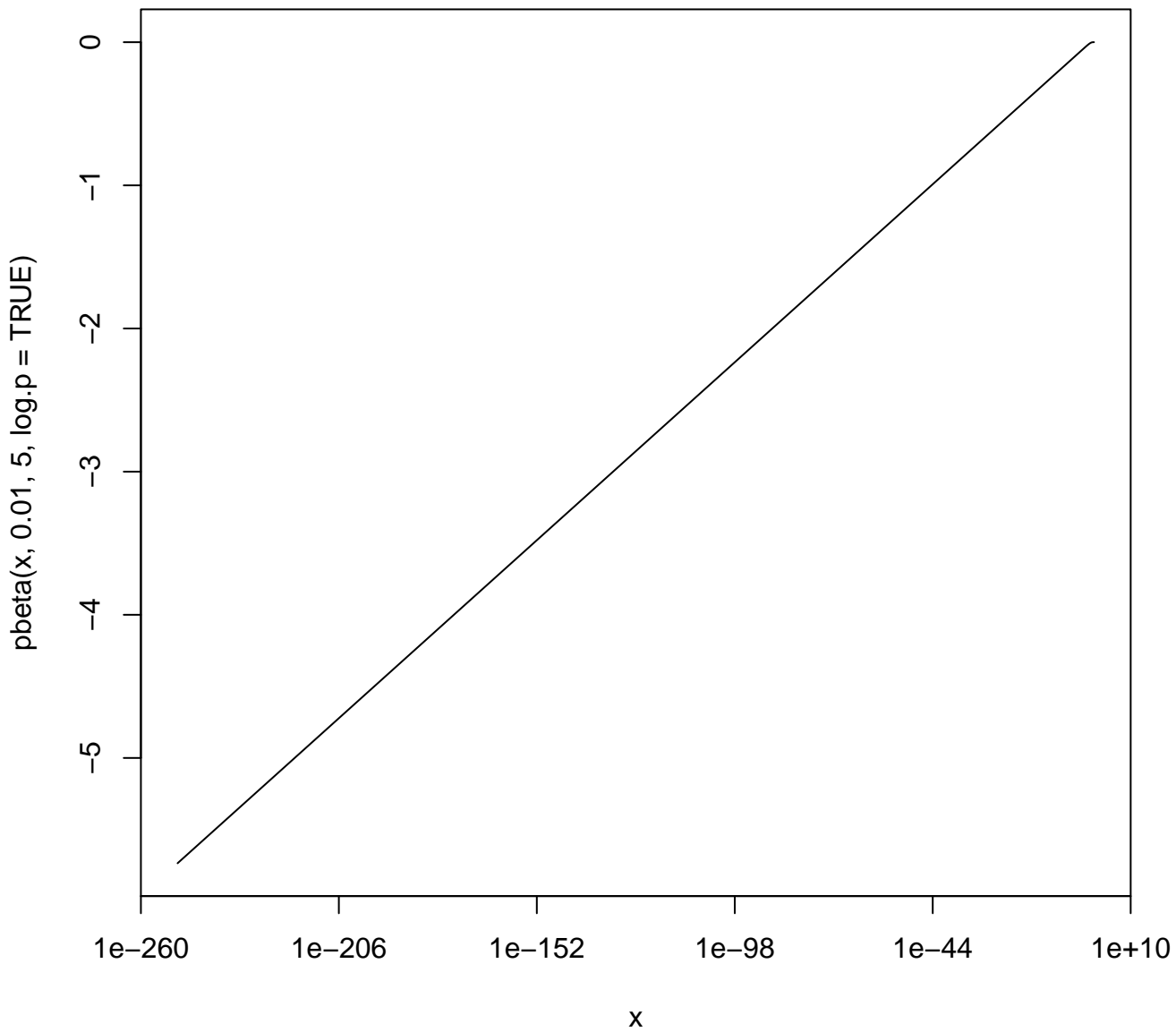
# qbeta(p, $\alpha$ , $\beta$ ) for small $\alpha$ and $p \downarrow 0$

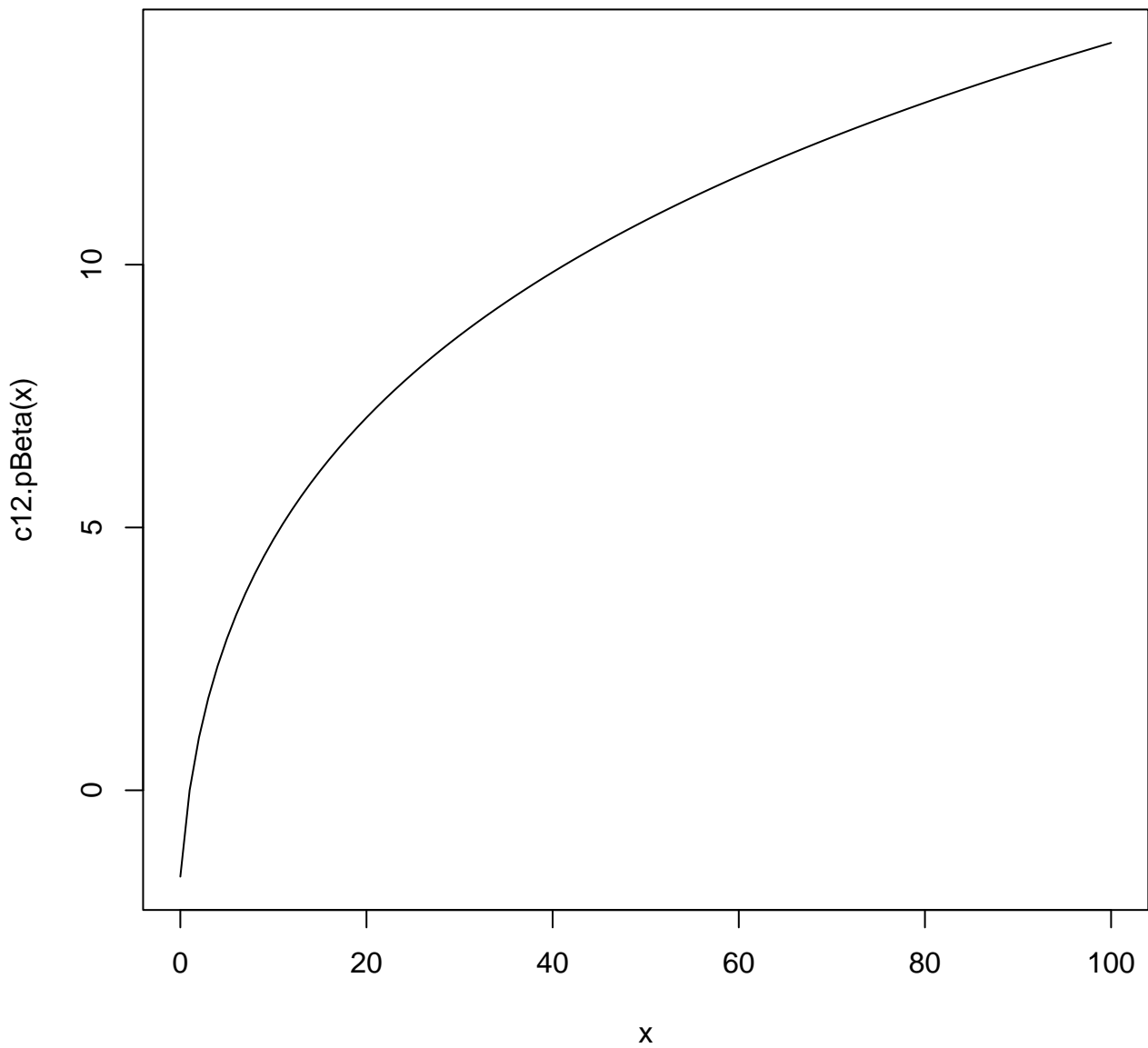




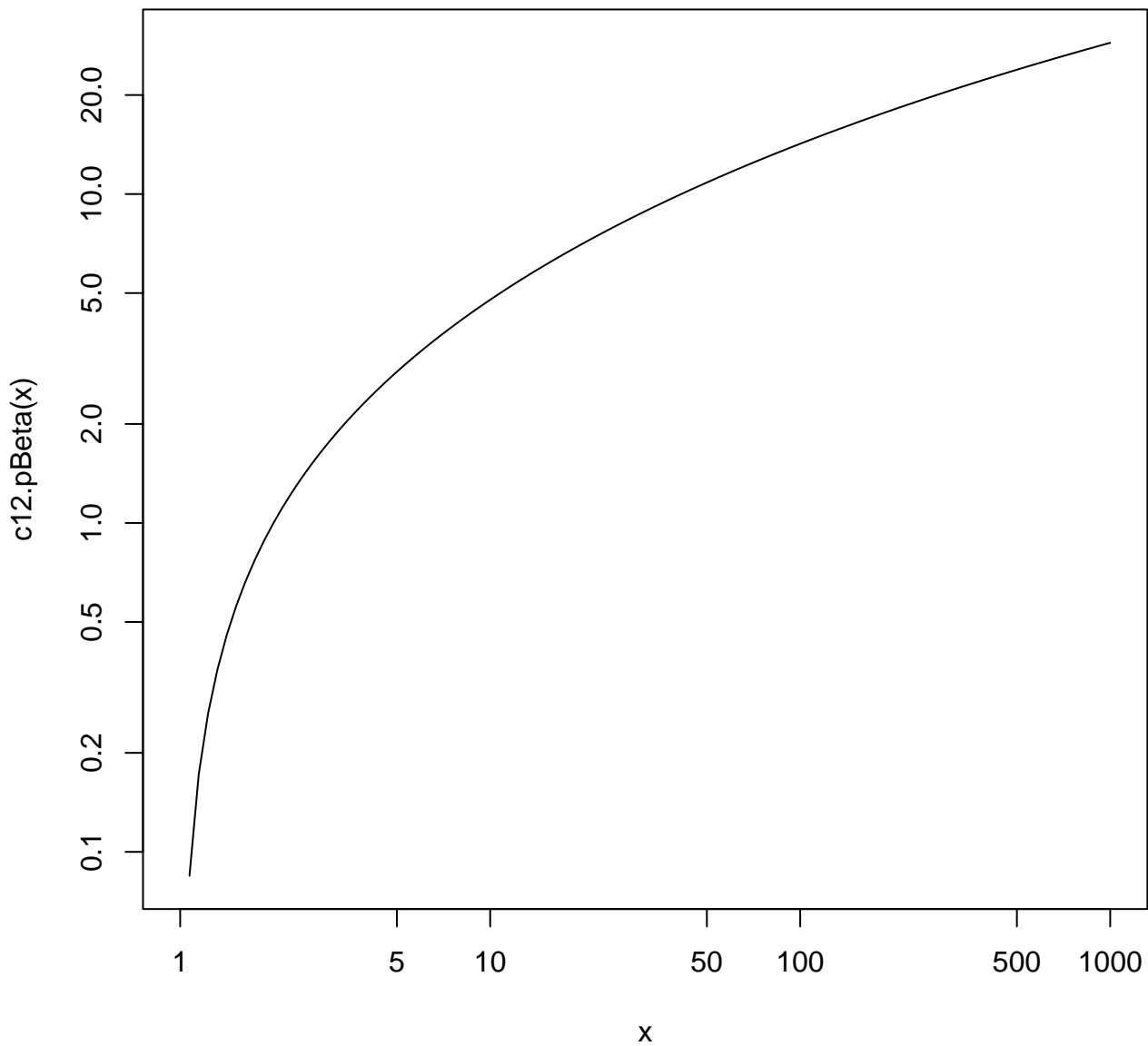






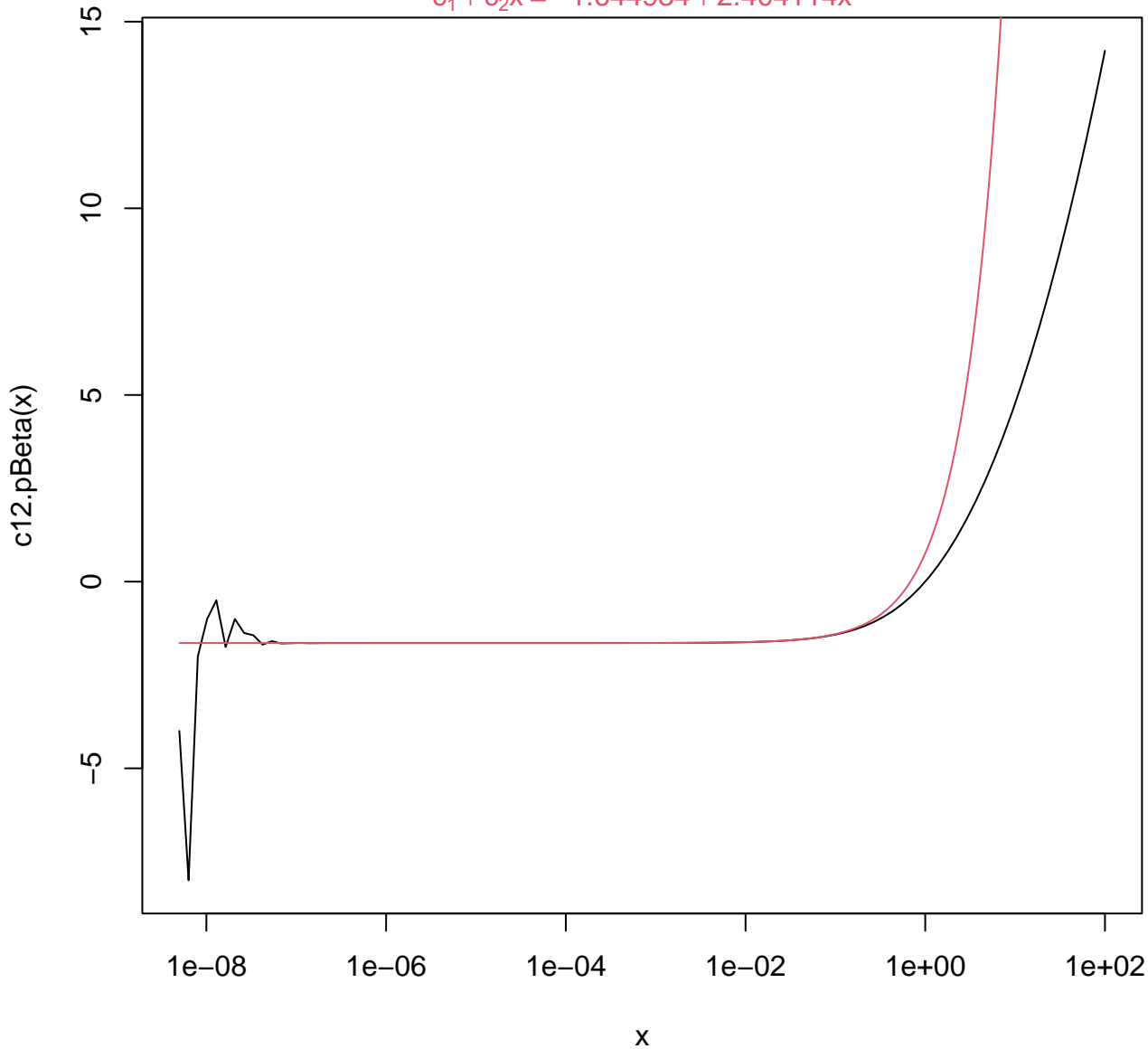






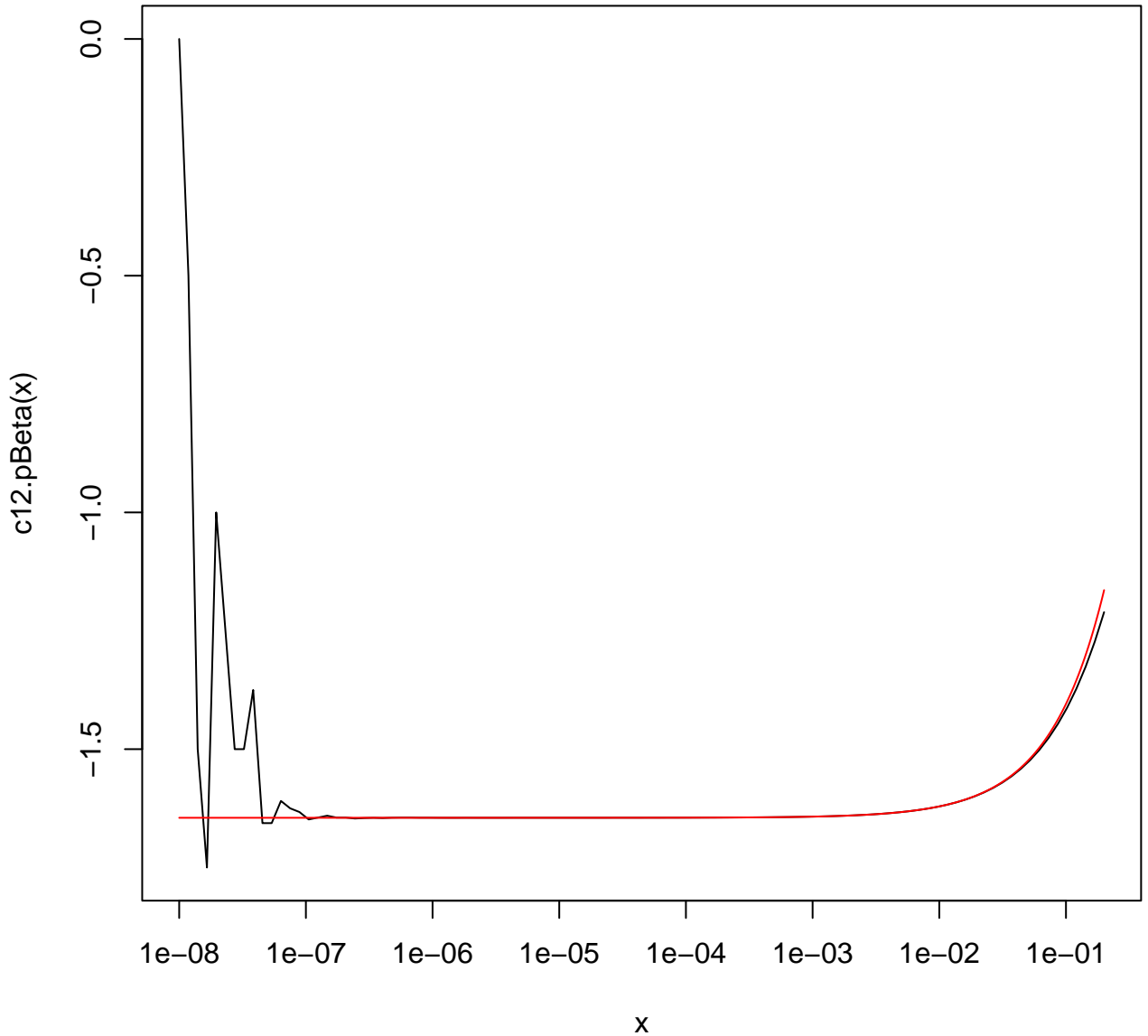
# c12.pBeta(x) and its (log-)linear approximation

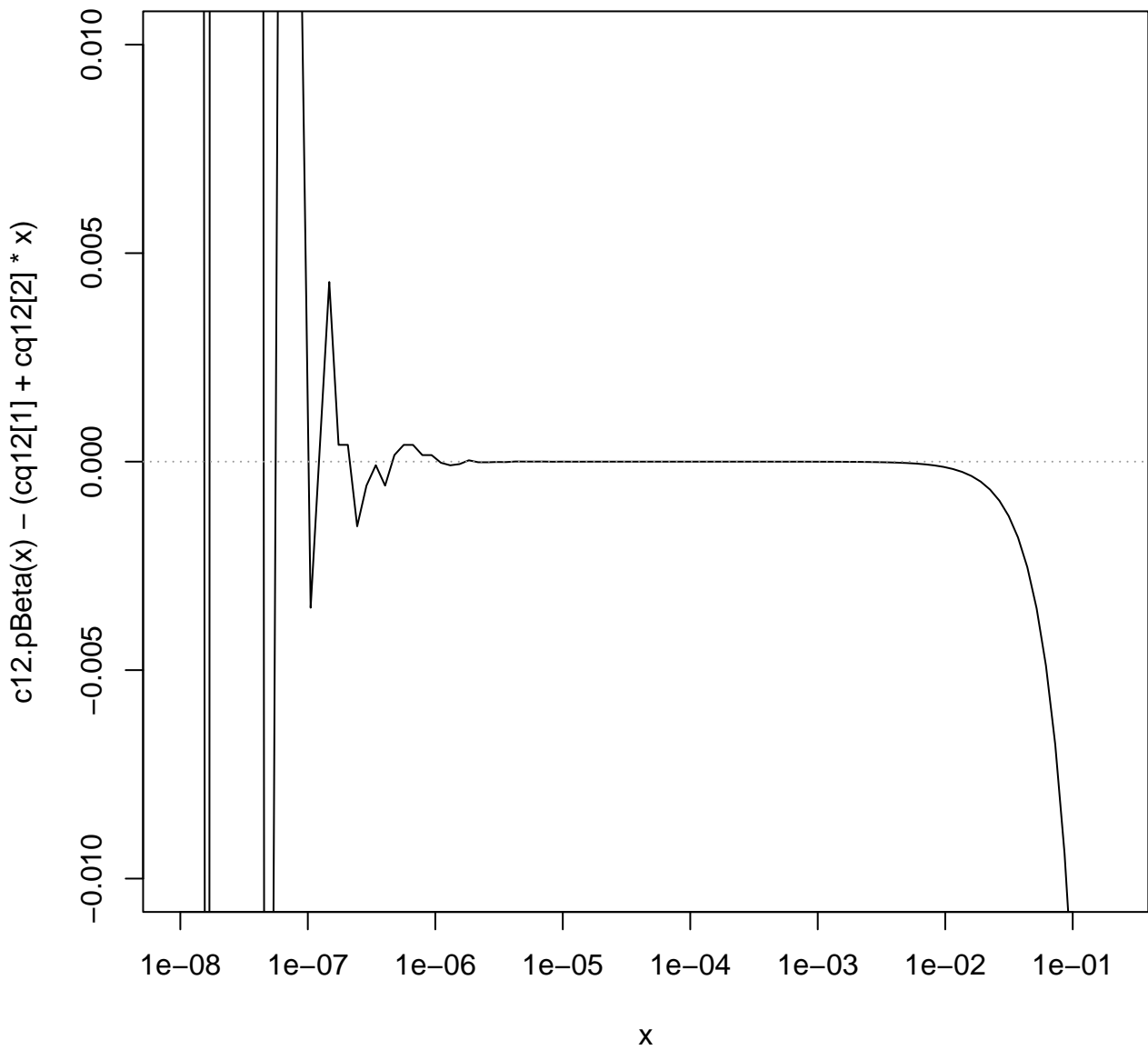
$$c_1 + c_2x = -1.644934 + 2.404114x$$

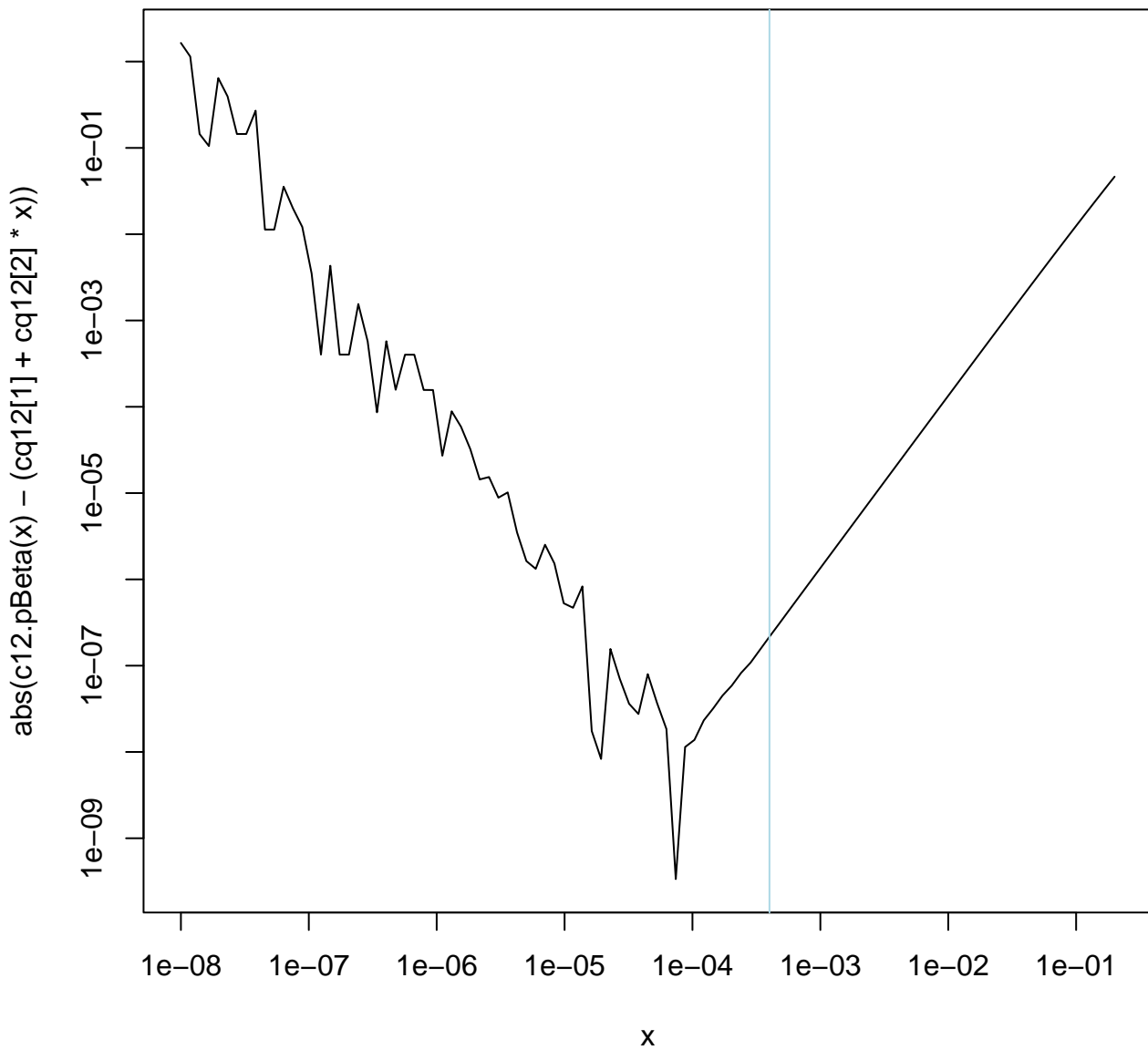


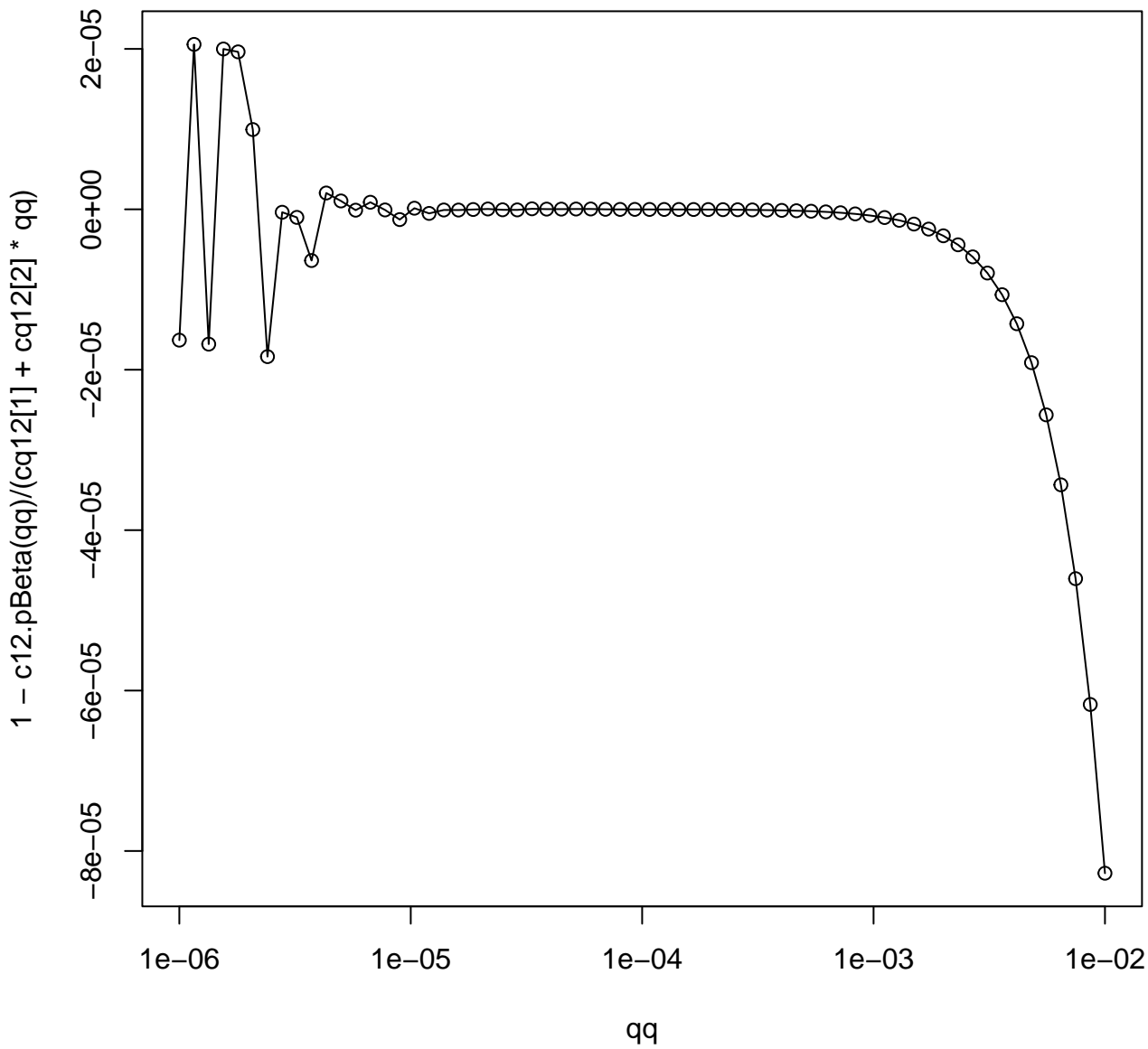
# c12.pBeta(x) and its (log-)linear approximation

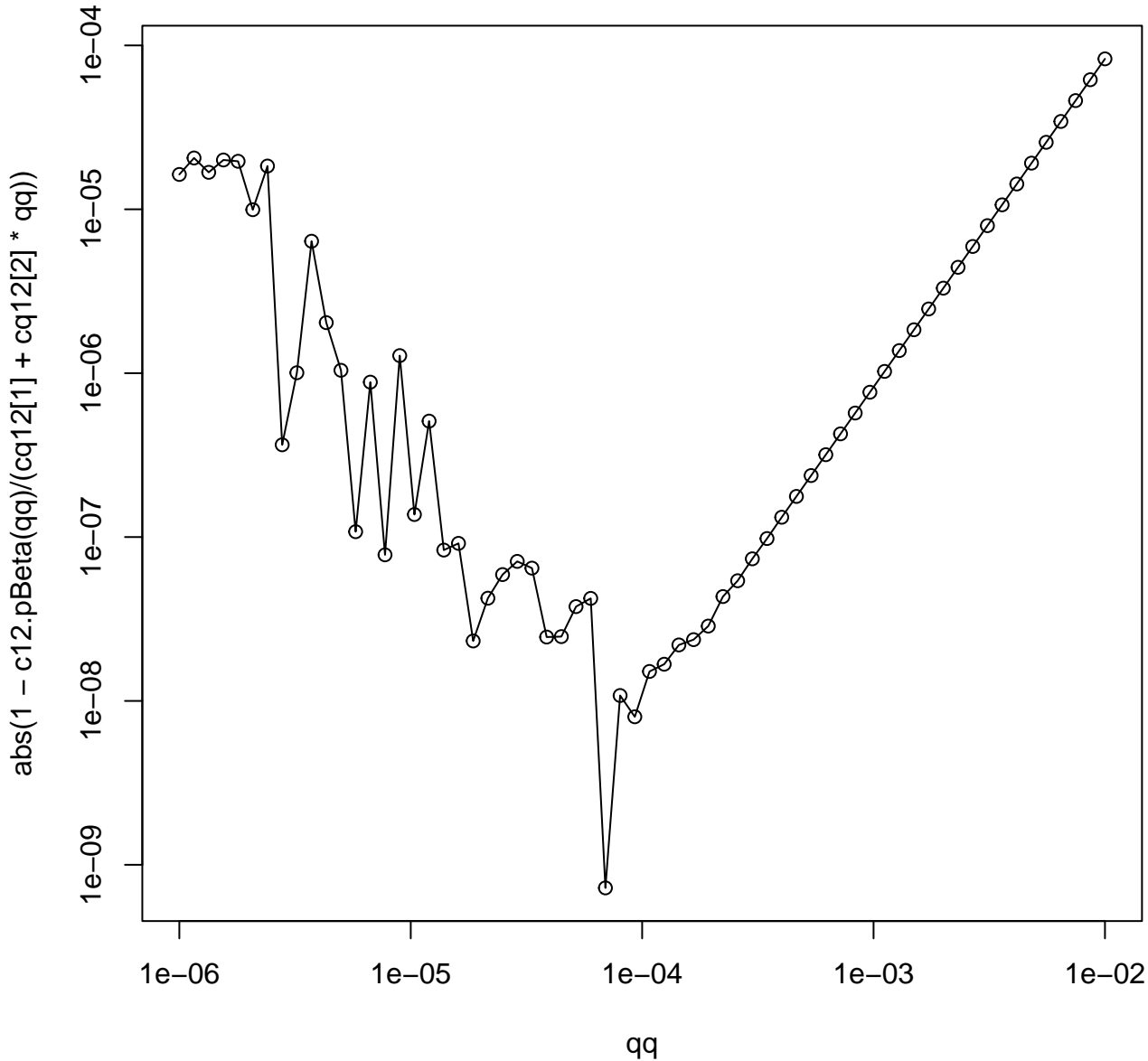
$$c_1 + c_2x = -1.644934 + 2.404114x$$



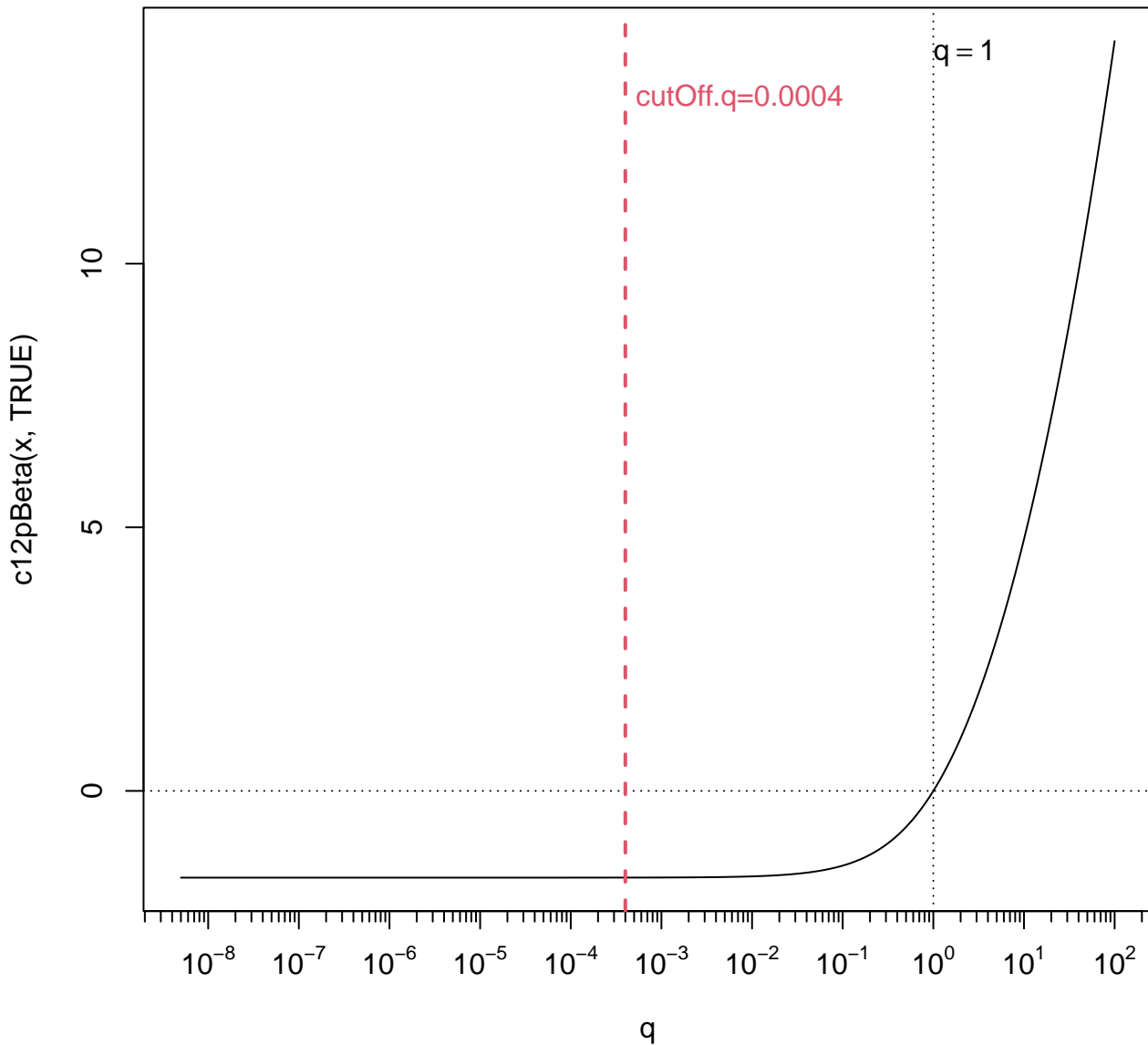






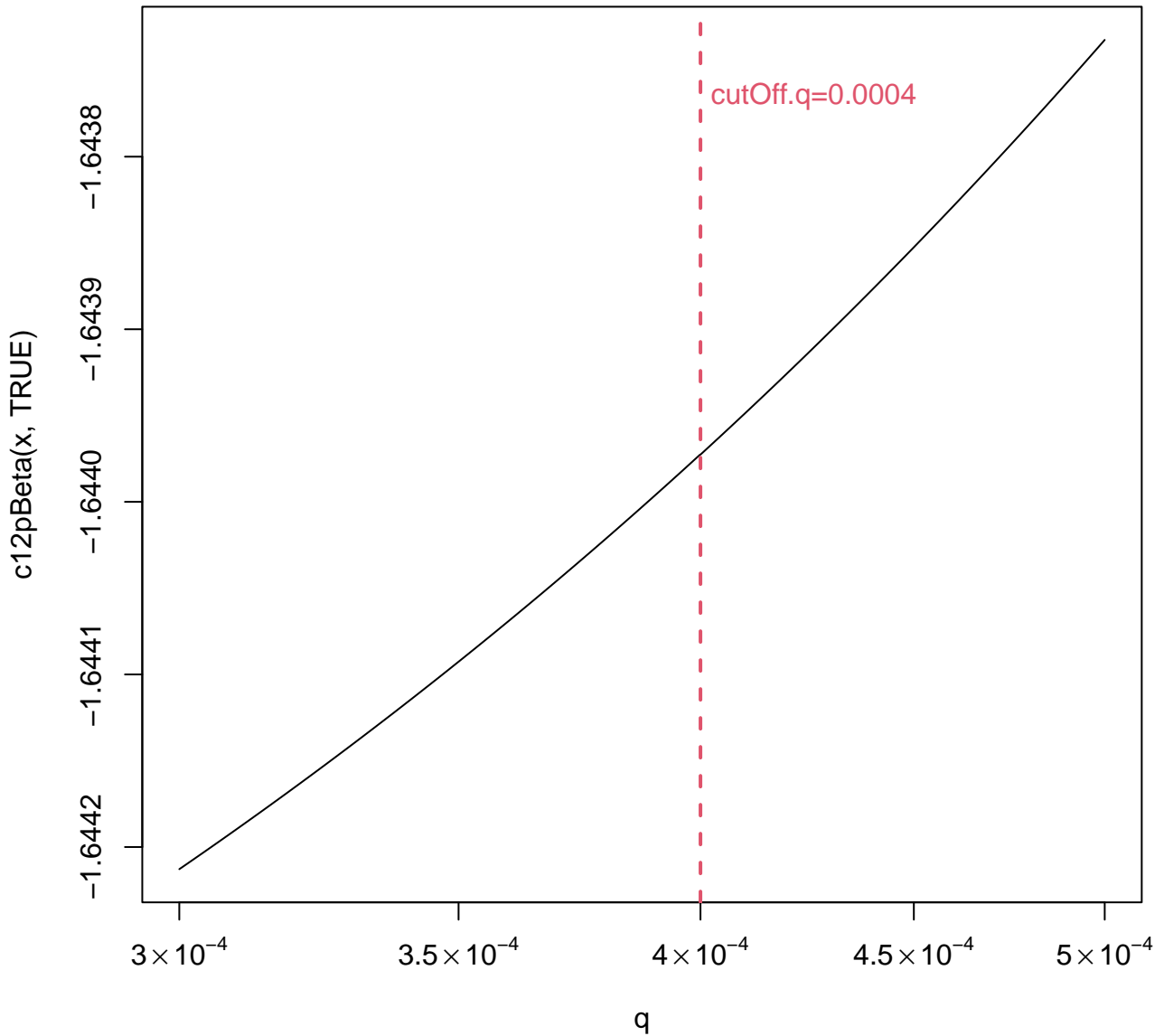


$c_2(q)$  from Beta expansion  $pB(p, q) \approx 1 + c_1p + c_2p^2$

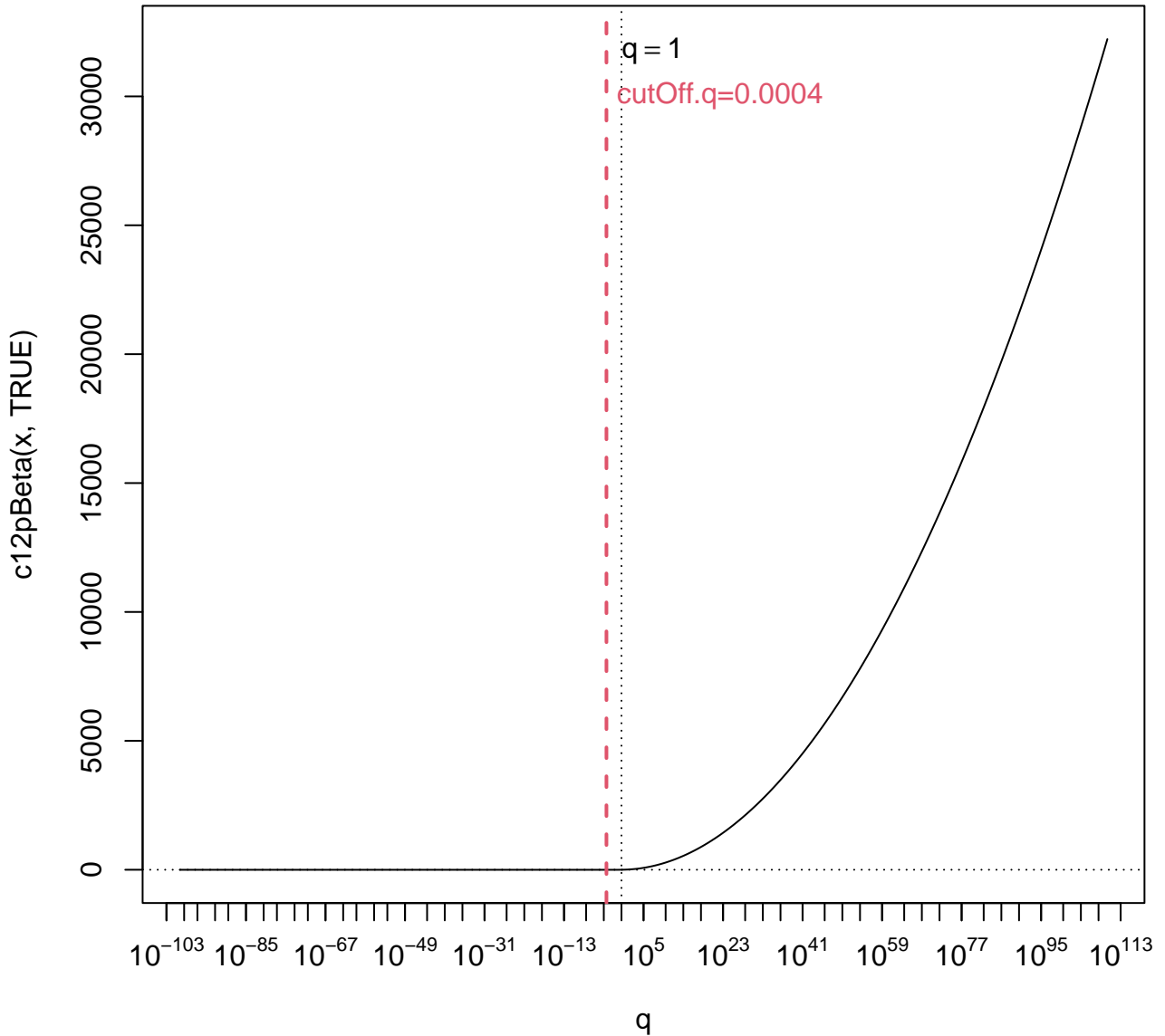




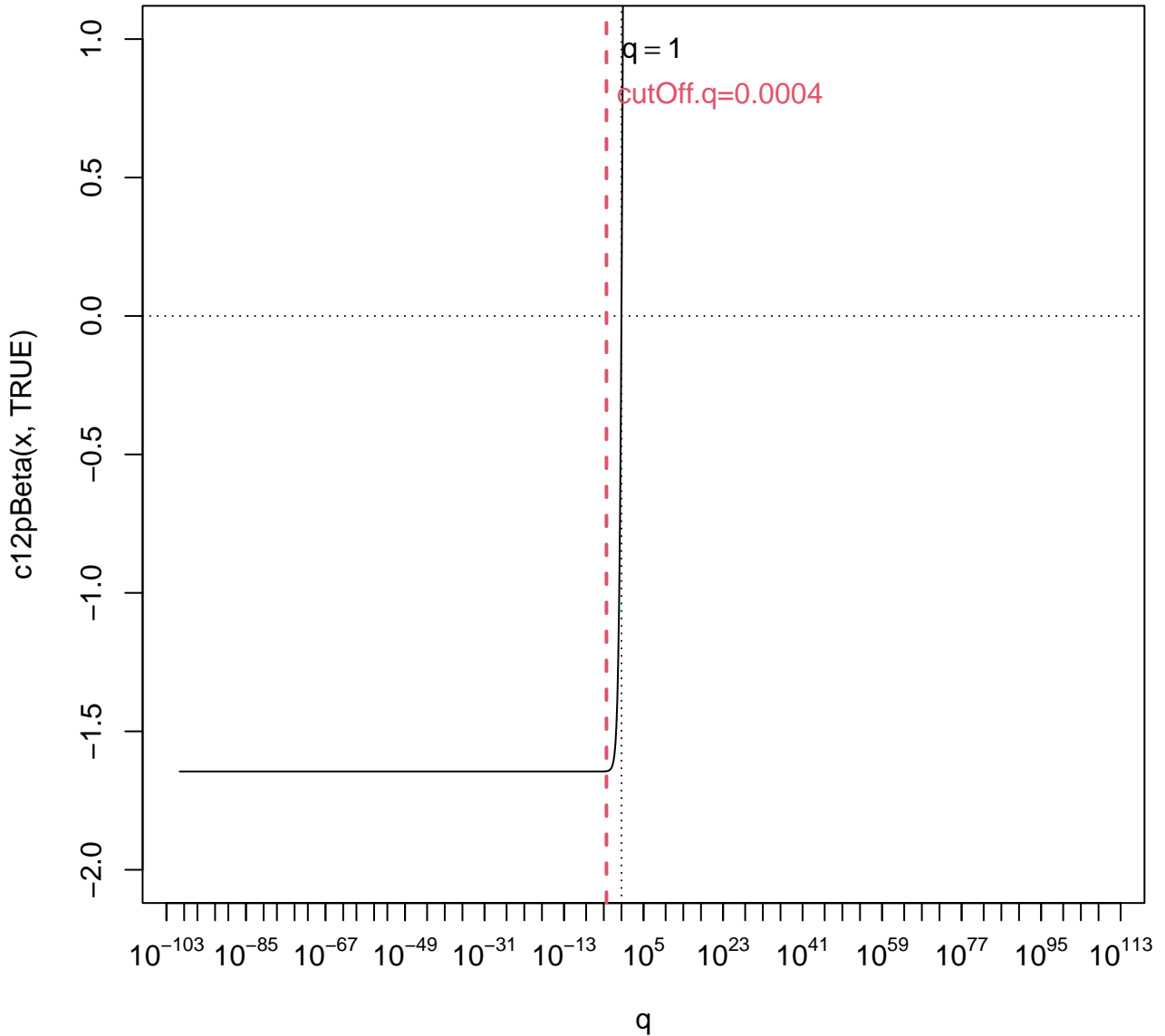
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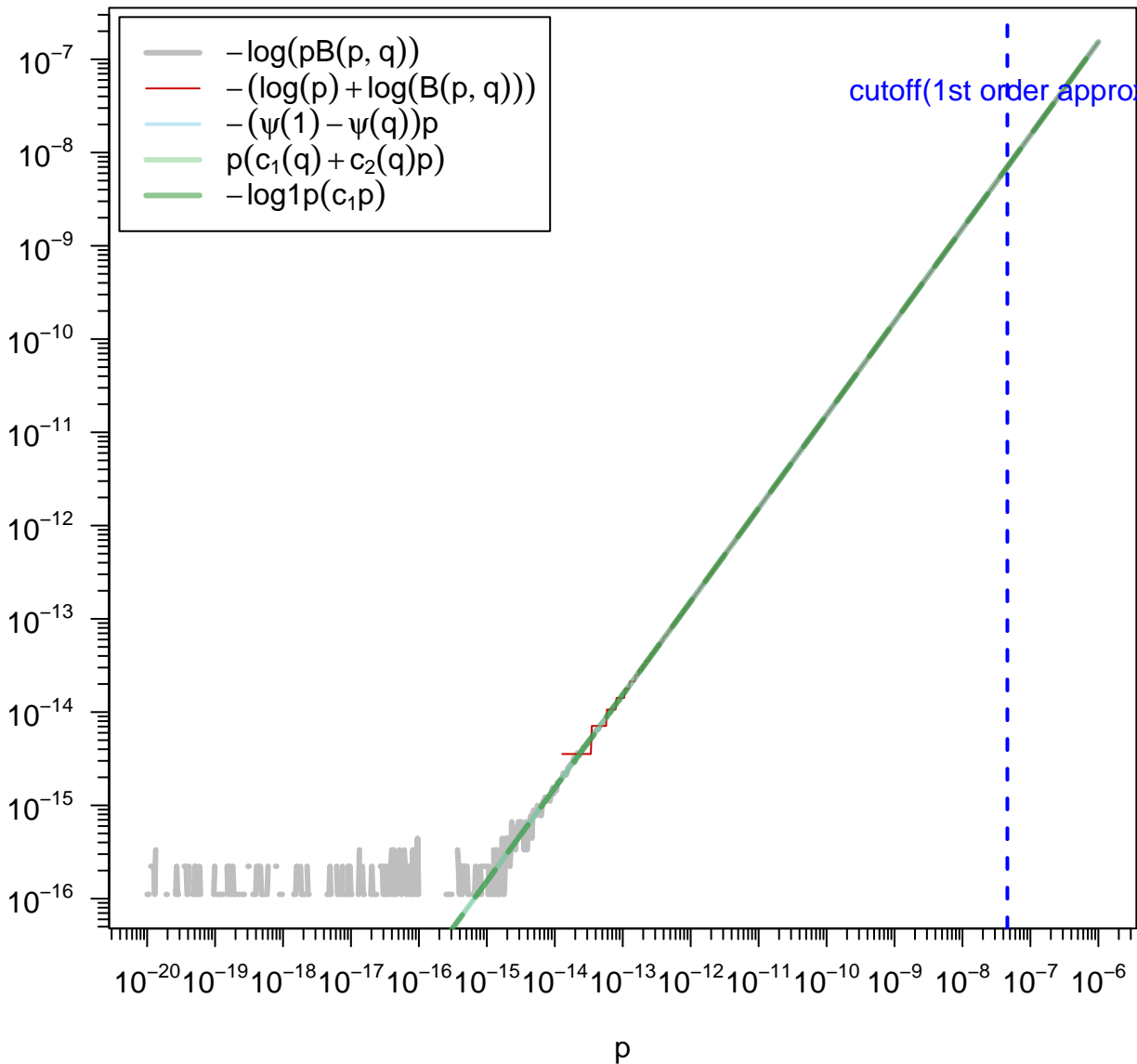
$c_2(q)$  from Beta expansion  $pB(p, q) \approx 1 + c_1p + c_2p^2$



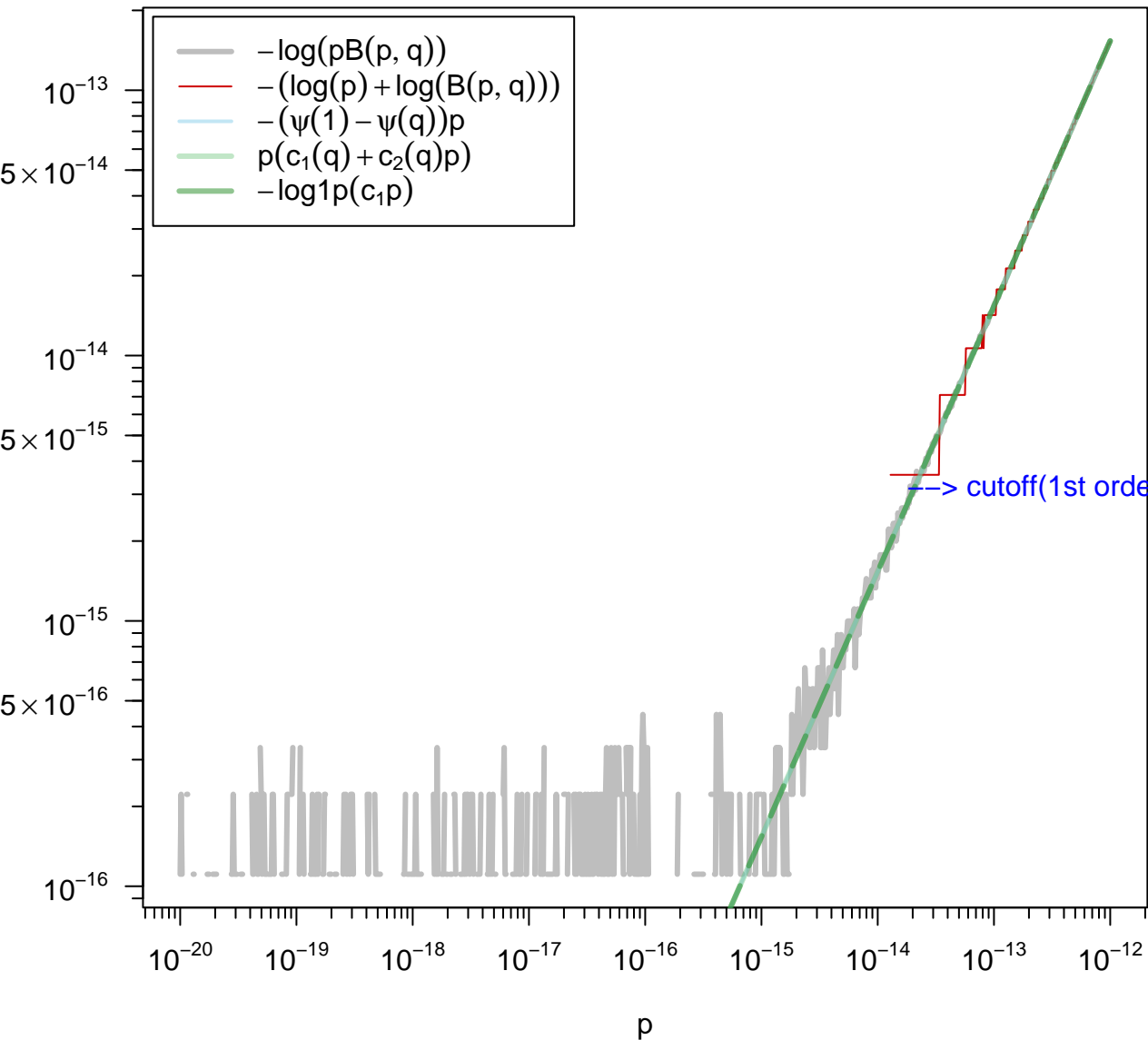
$$c_2(q) \text{ from Beta expansion } pB(p, q) \approx 1 + c_1p + c_2p^2$$



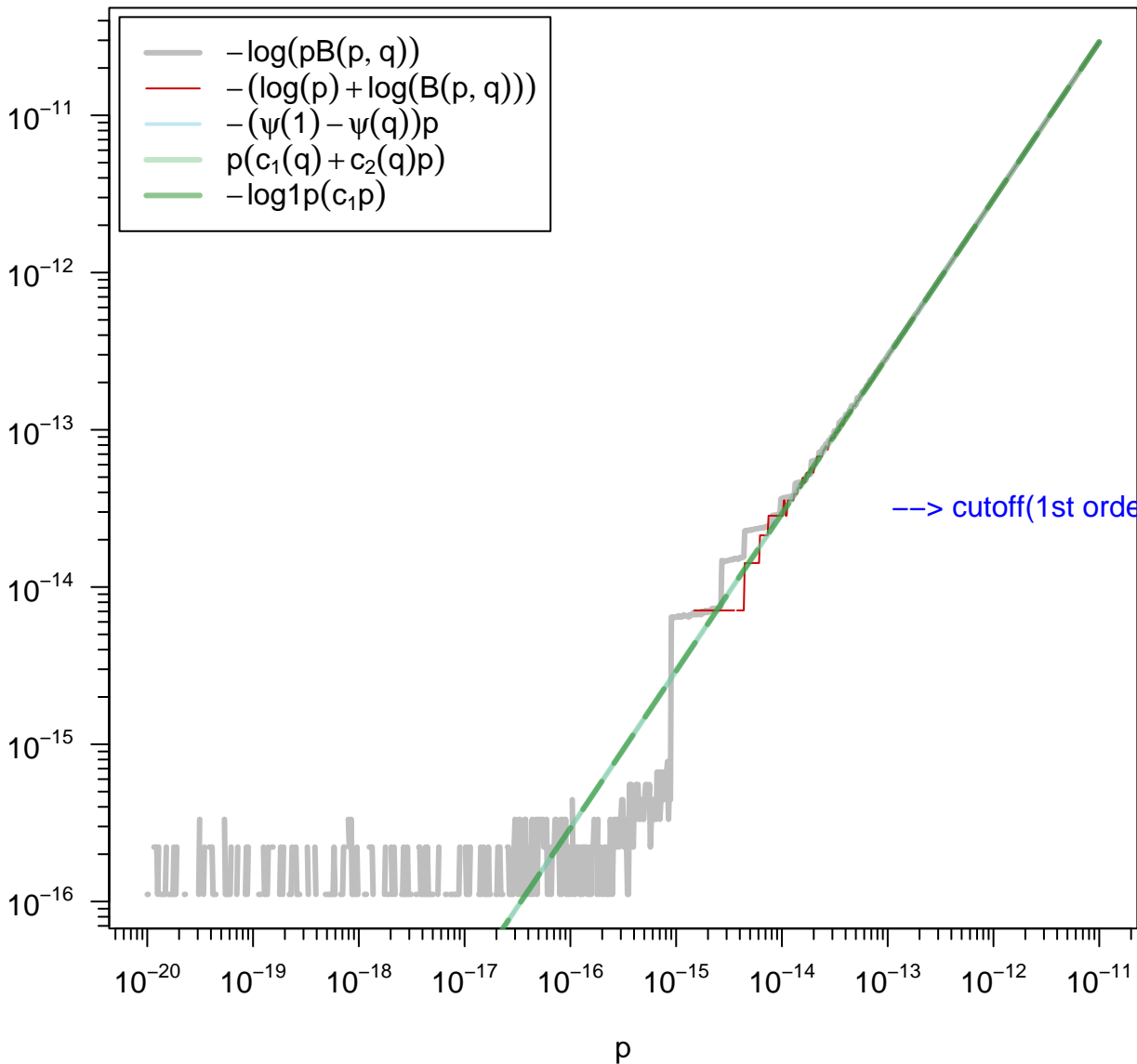
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 1.1$ )



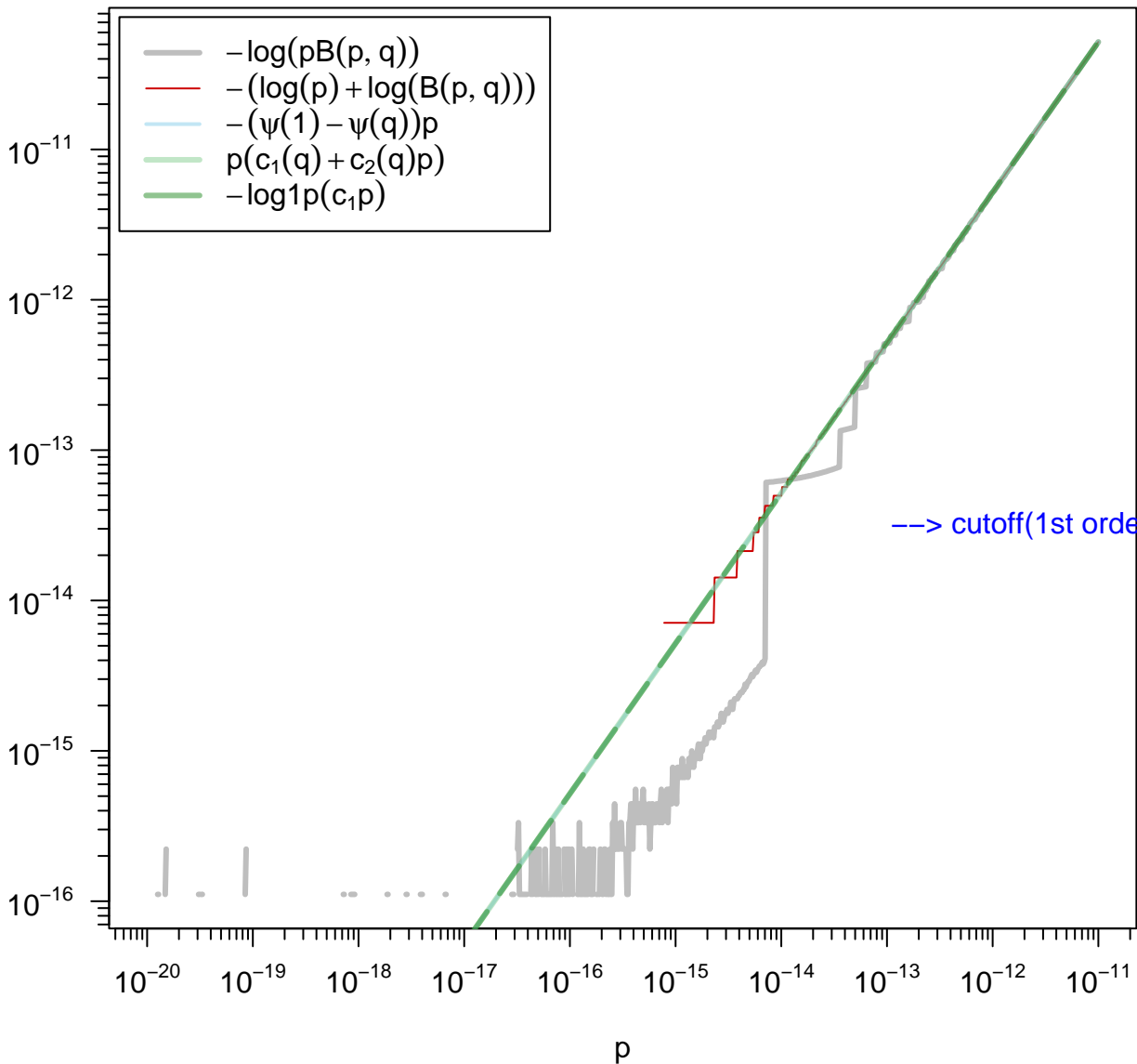
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 1.1$ )



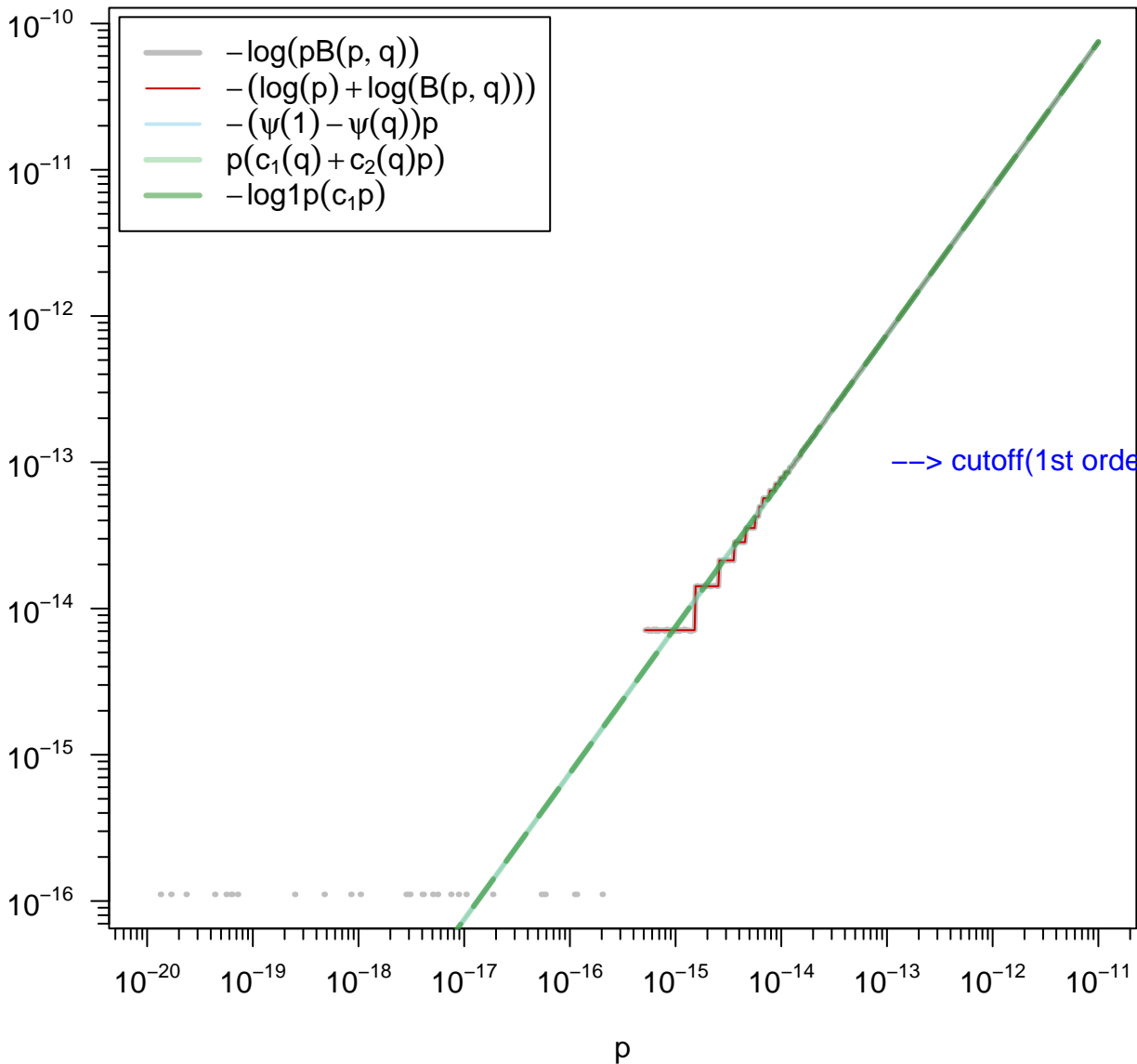
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 11$ )



Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 101$ )

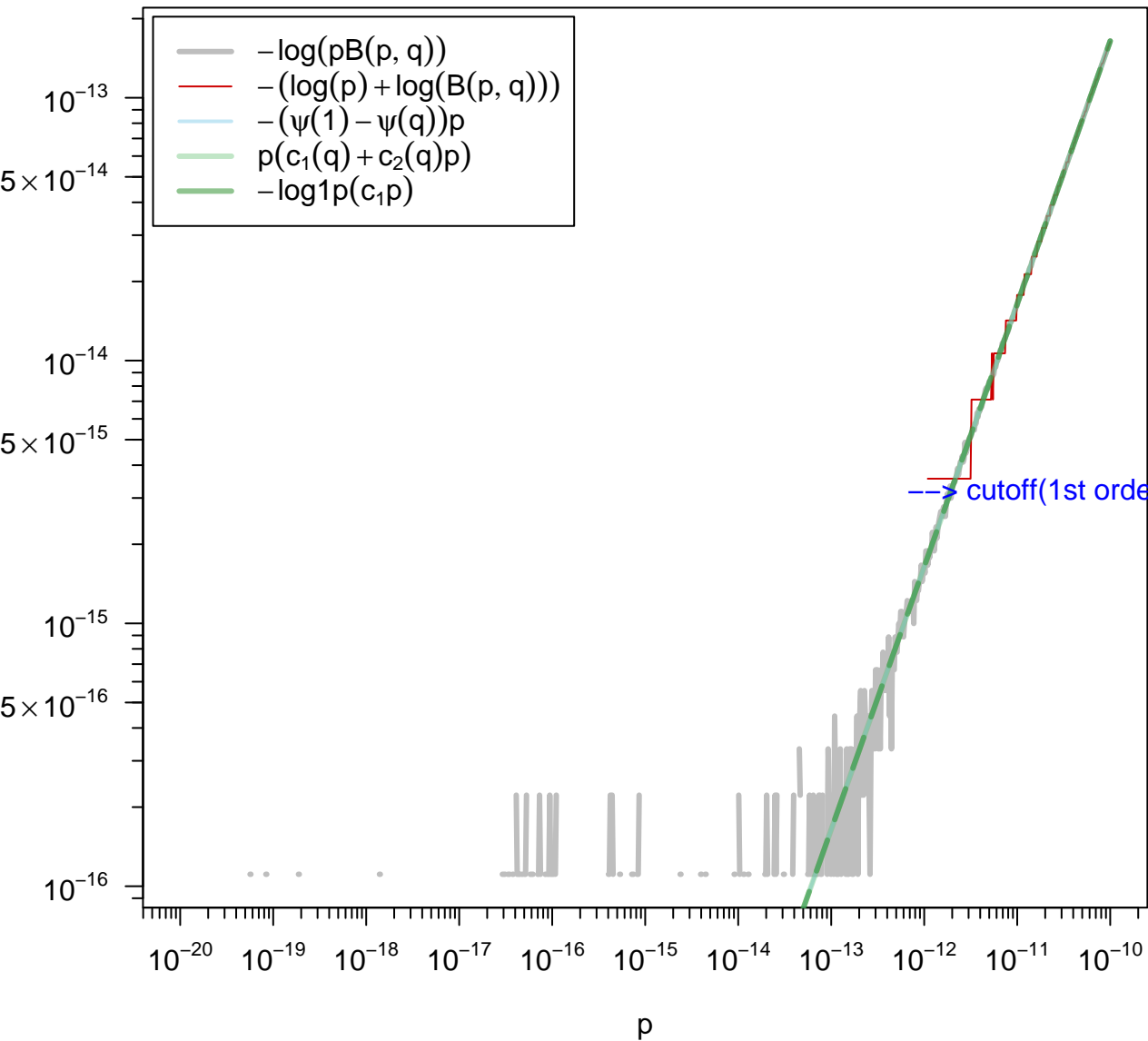


# Accurately computing $\log(p \cdot B(p, q))$ for $p \rightarrow 0$ , ( $q = 1001$ )

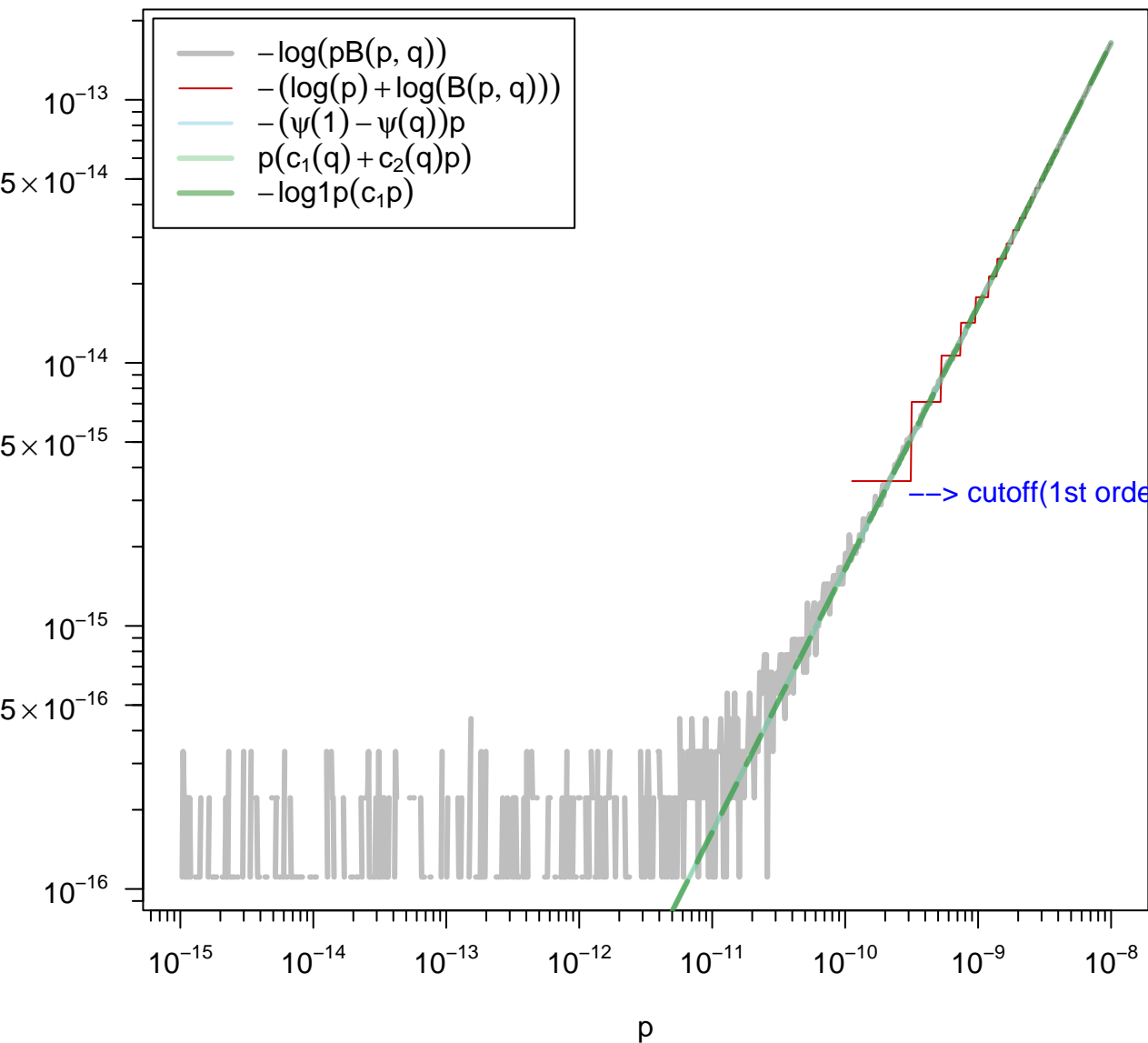




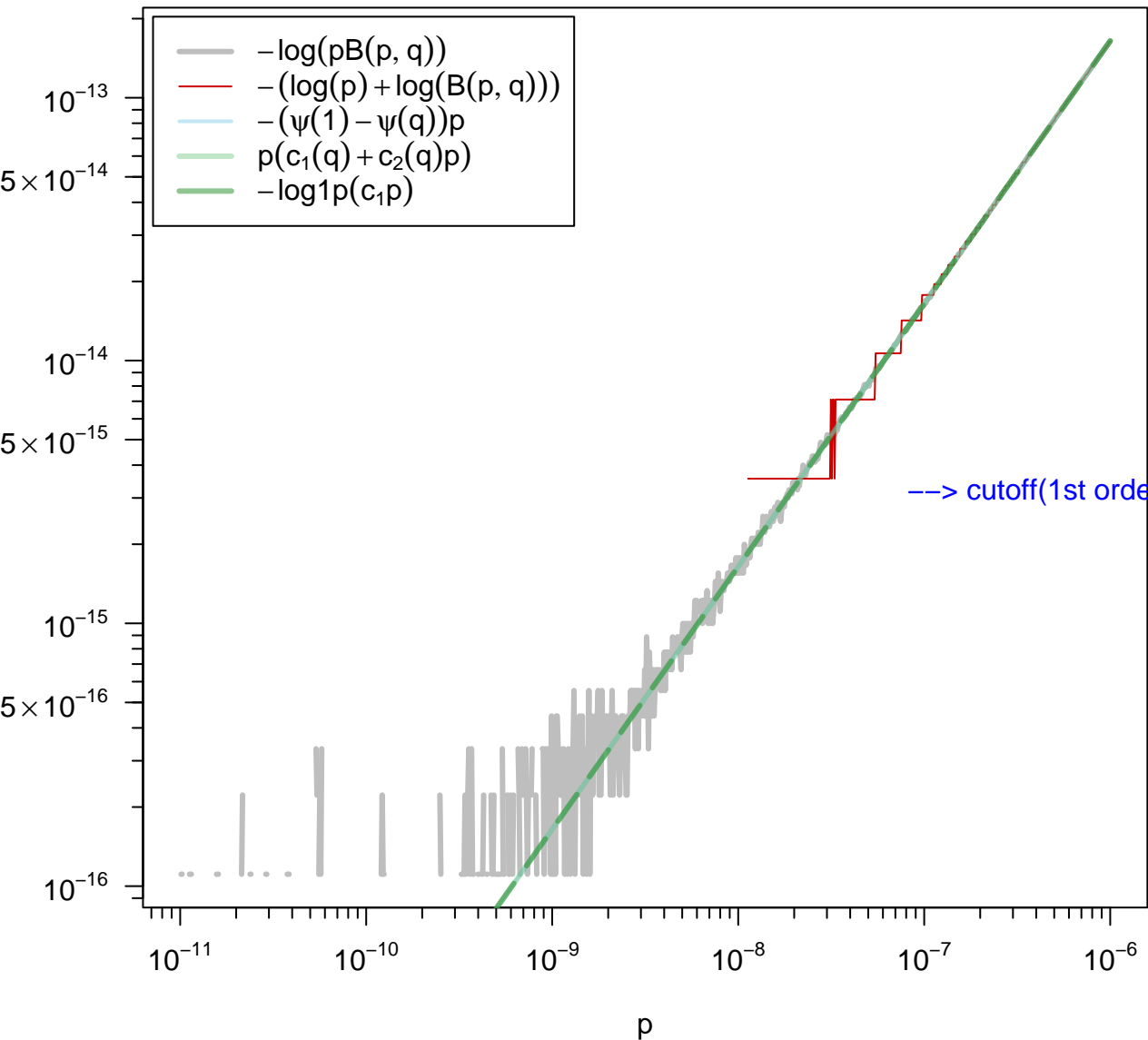
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 1.001$ )



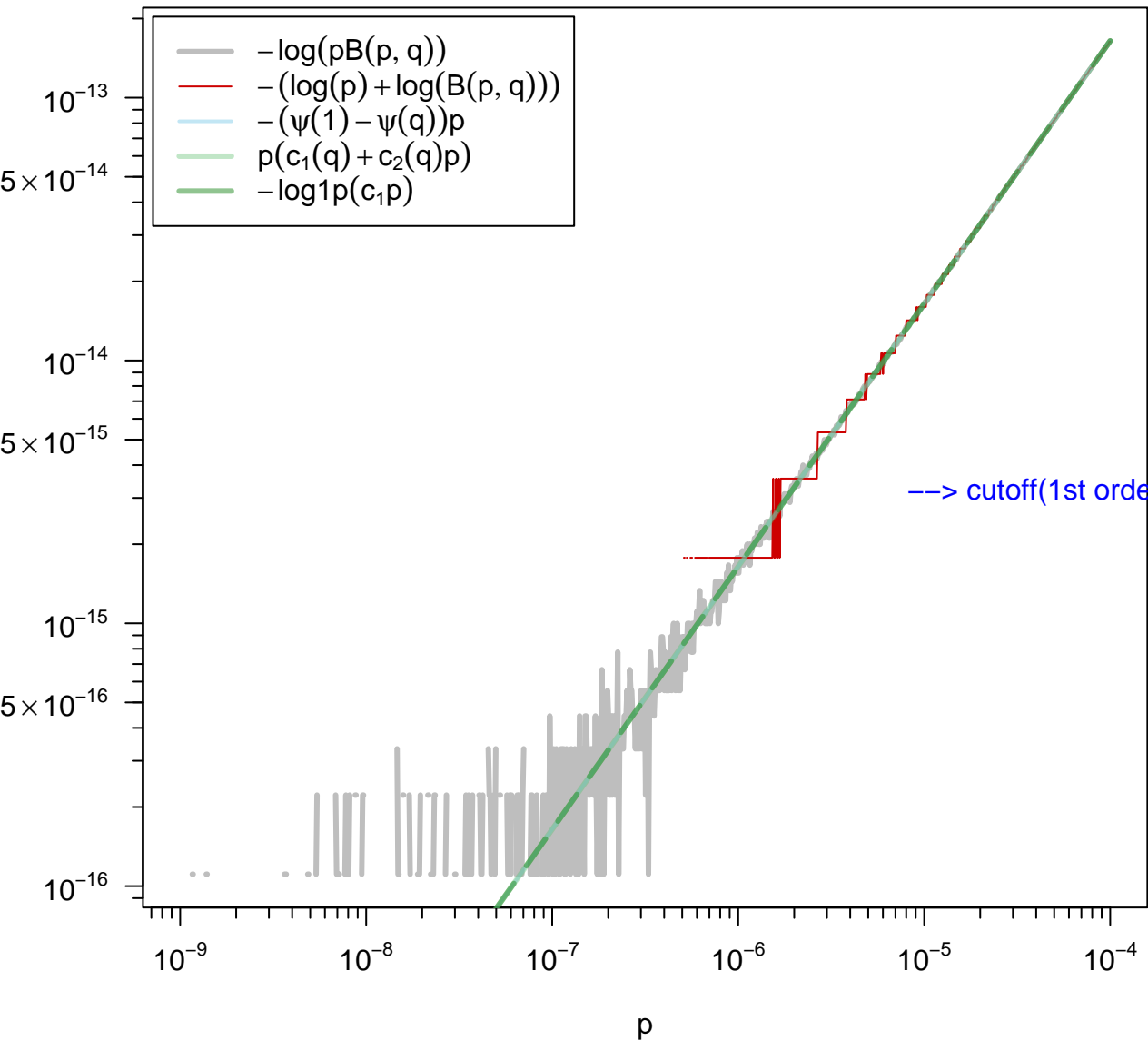
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 1.00001$ )



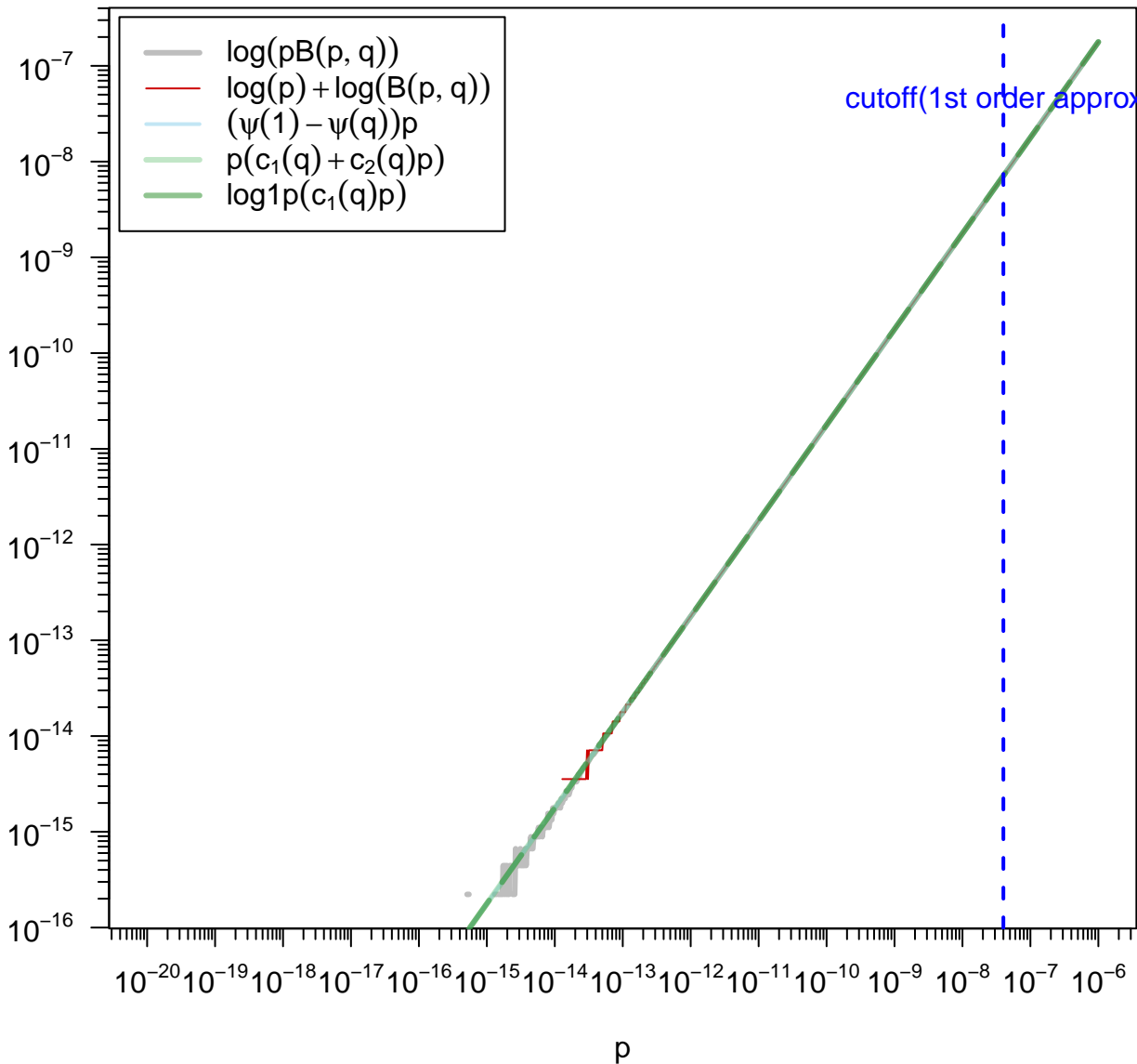
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 1.0000001$ )



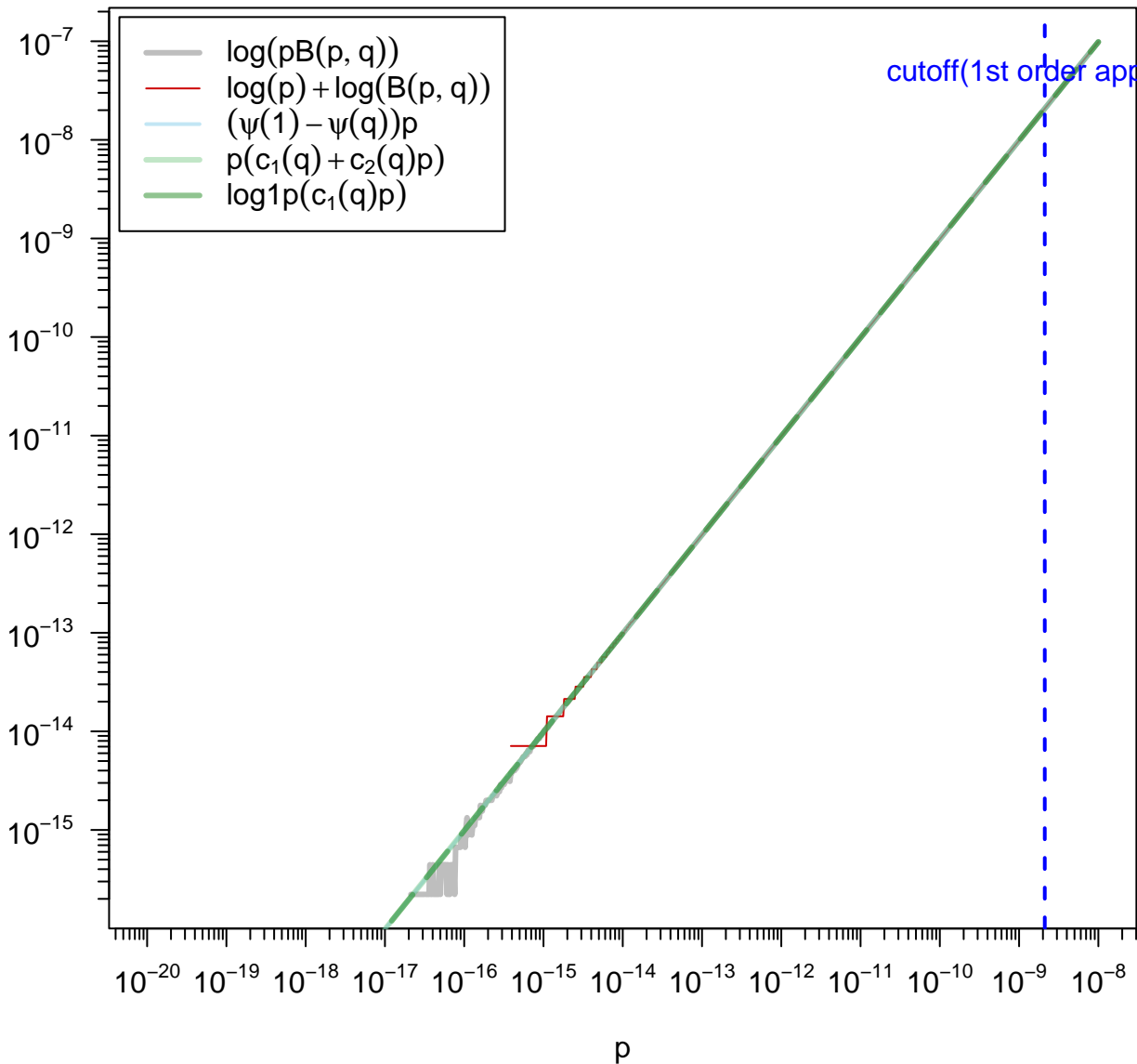
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 1.000000001$ )



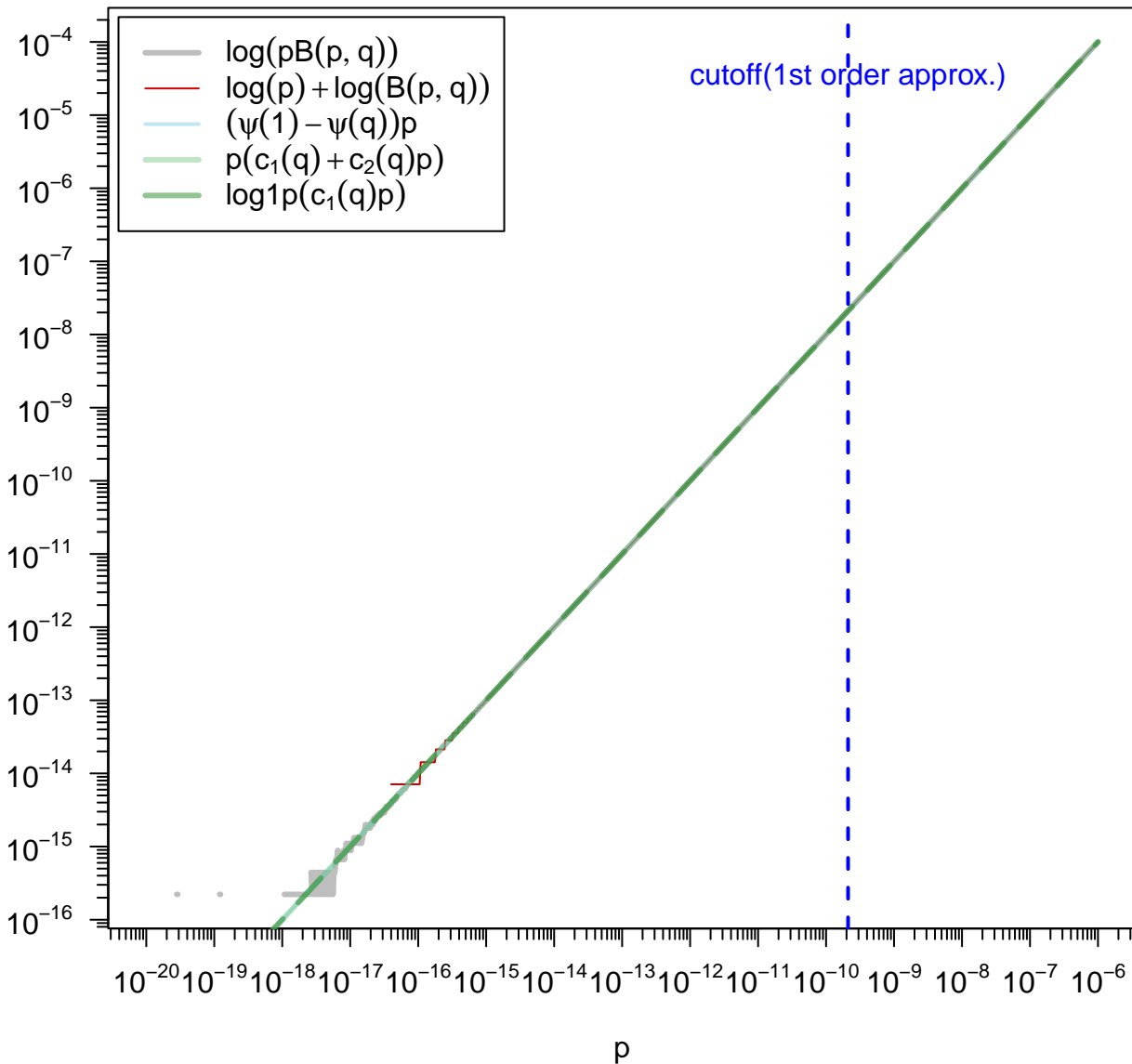
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 0.9$ )



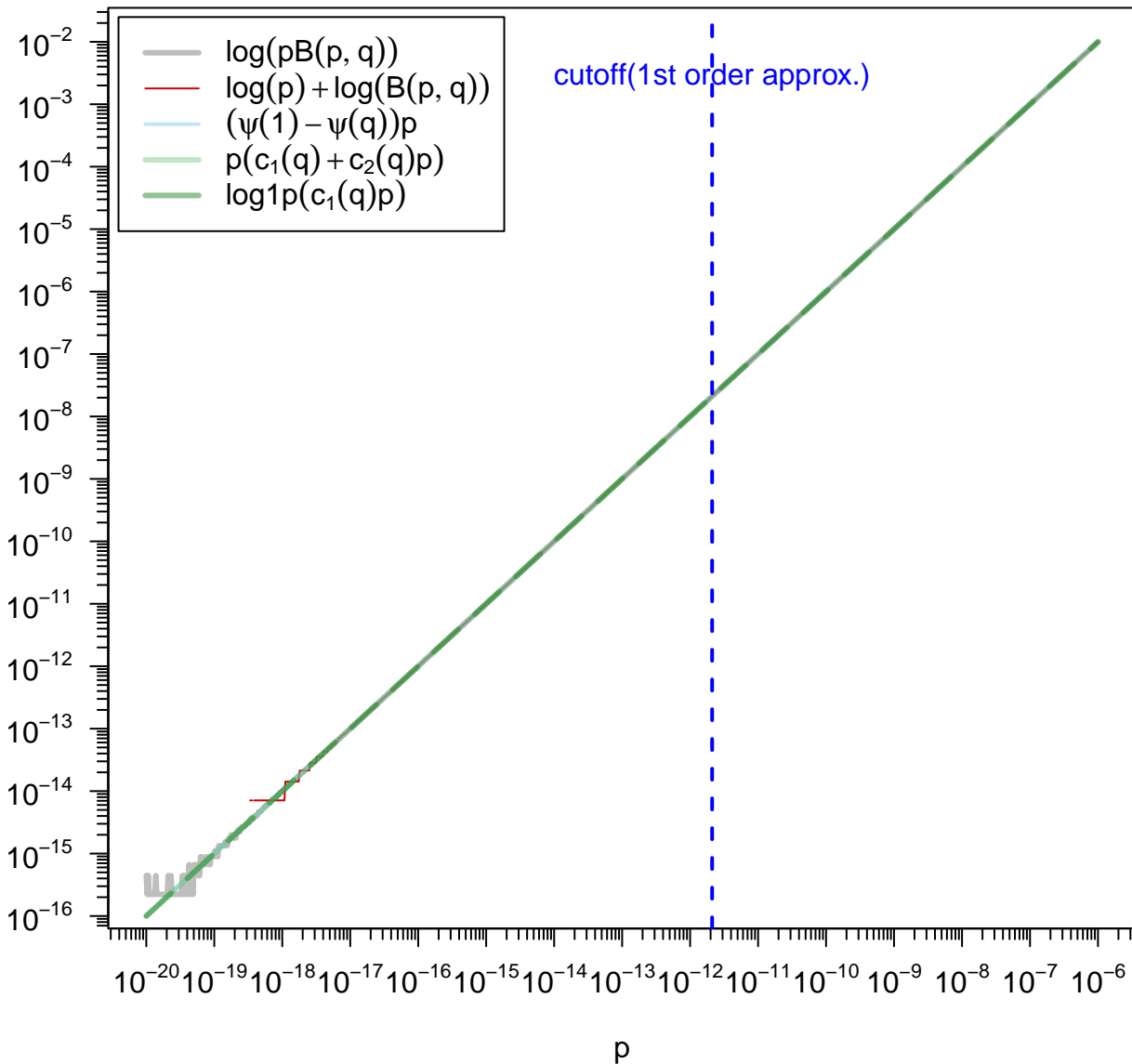
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 0.1$ )



Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 0.01$ )

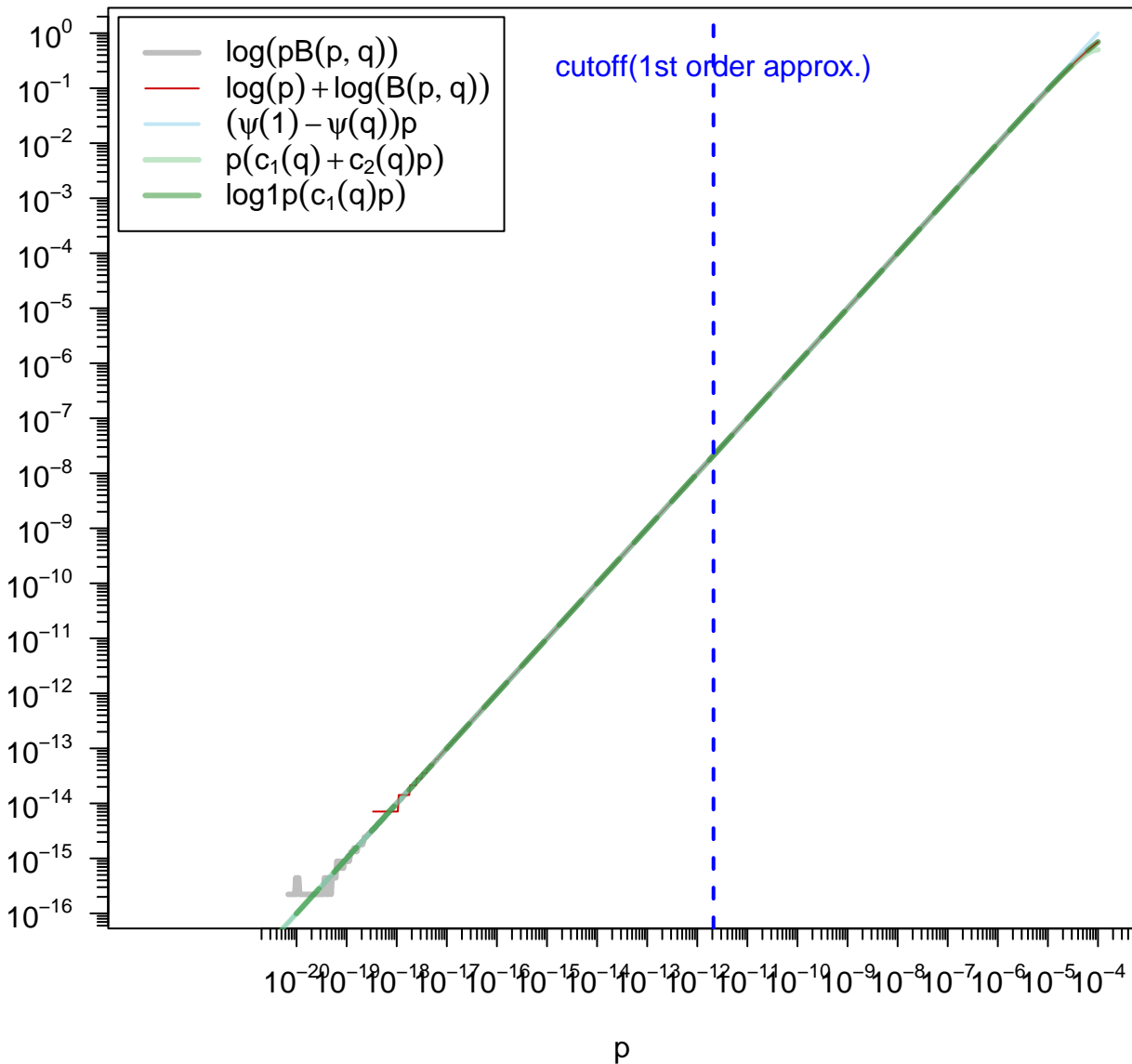


Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 1e-04$ )

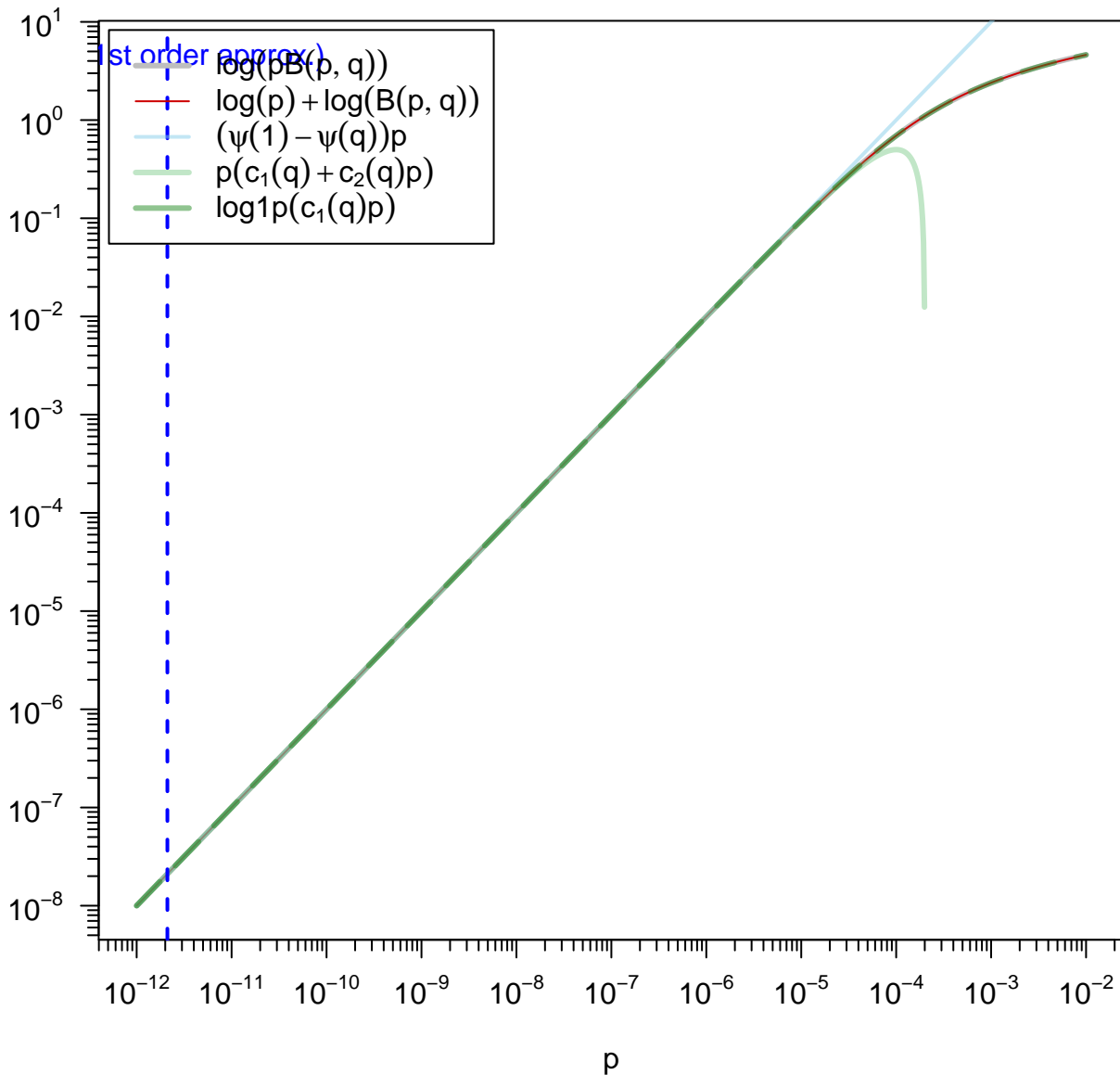




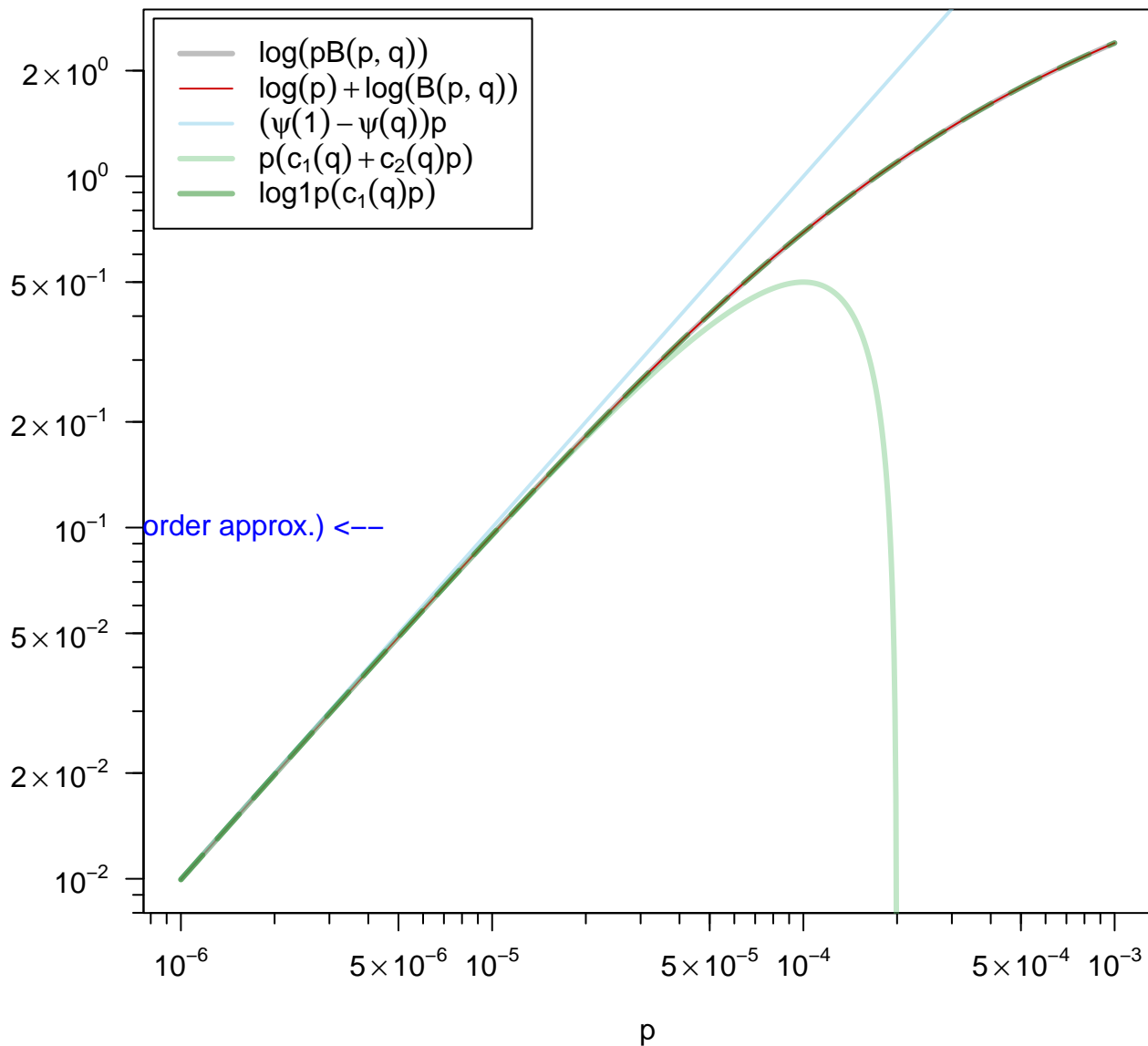
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 1e-04$ )



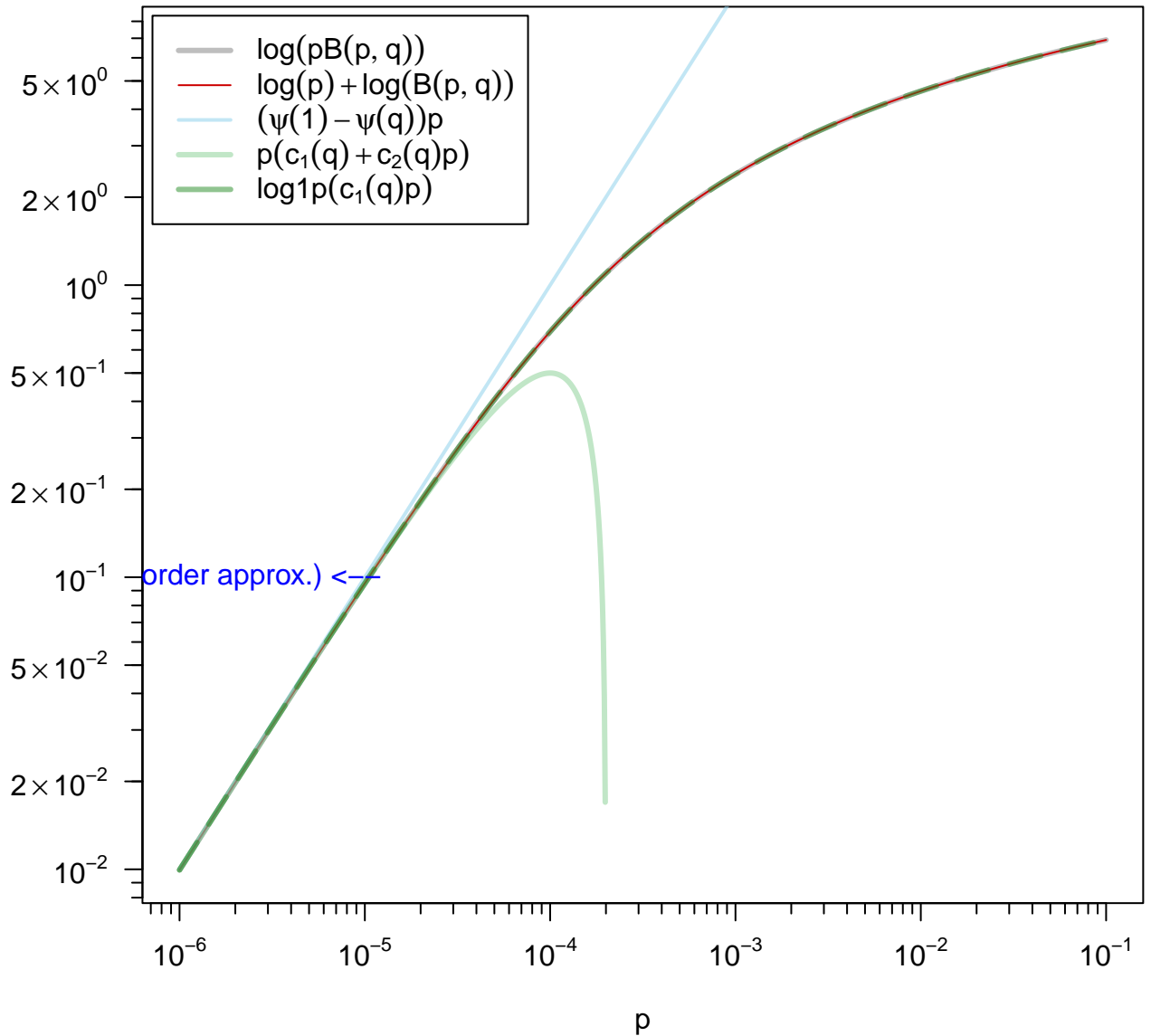
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 1e-04$ )



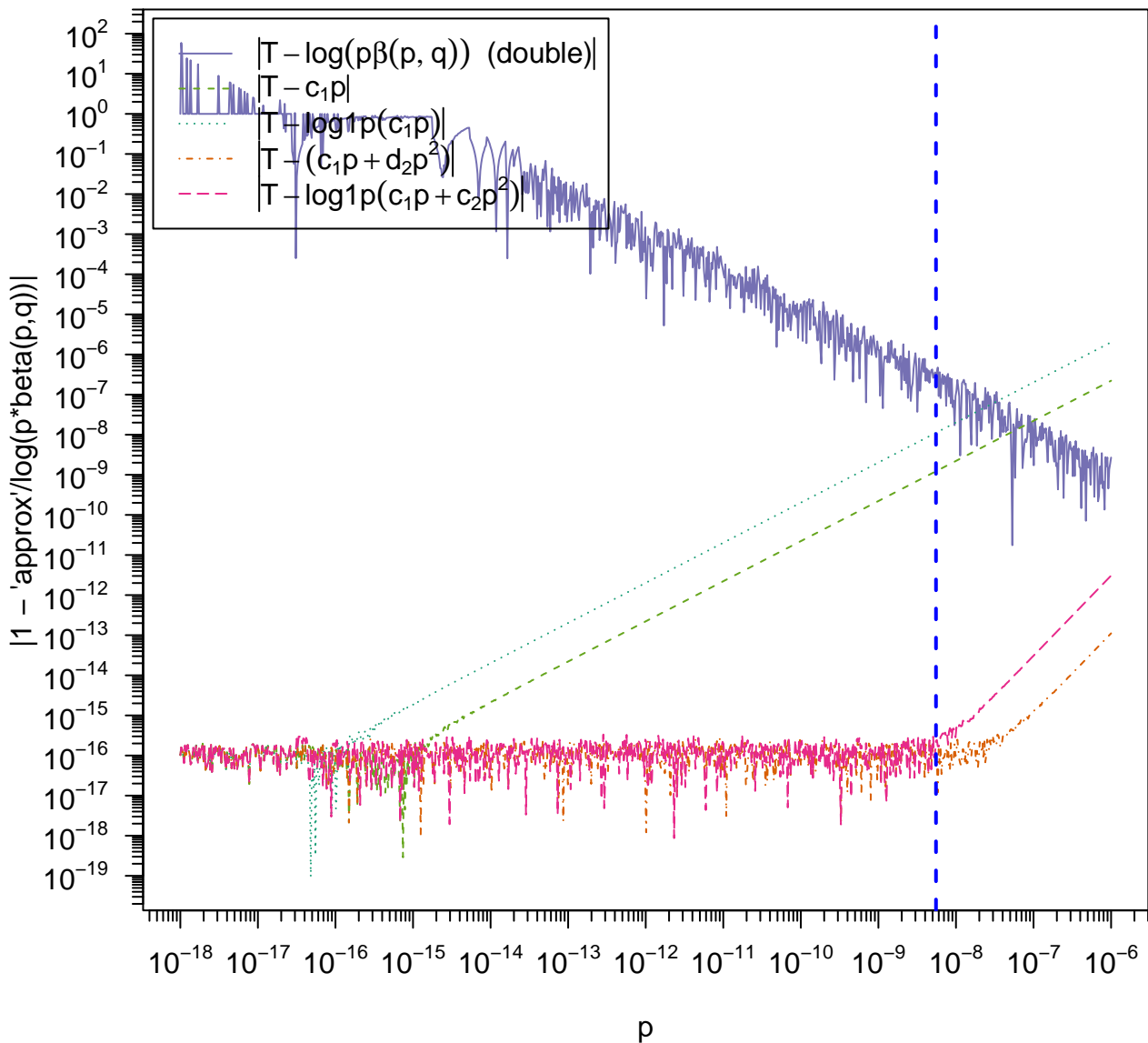
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 1e-04$ )



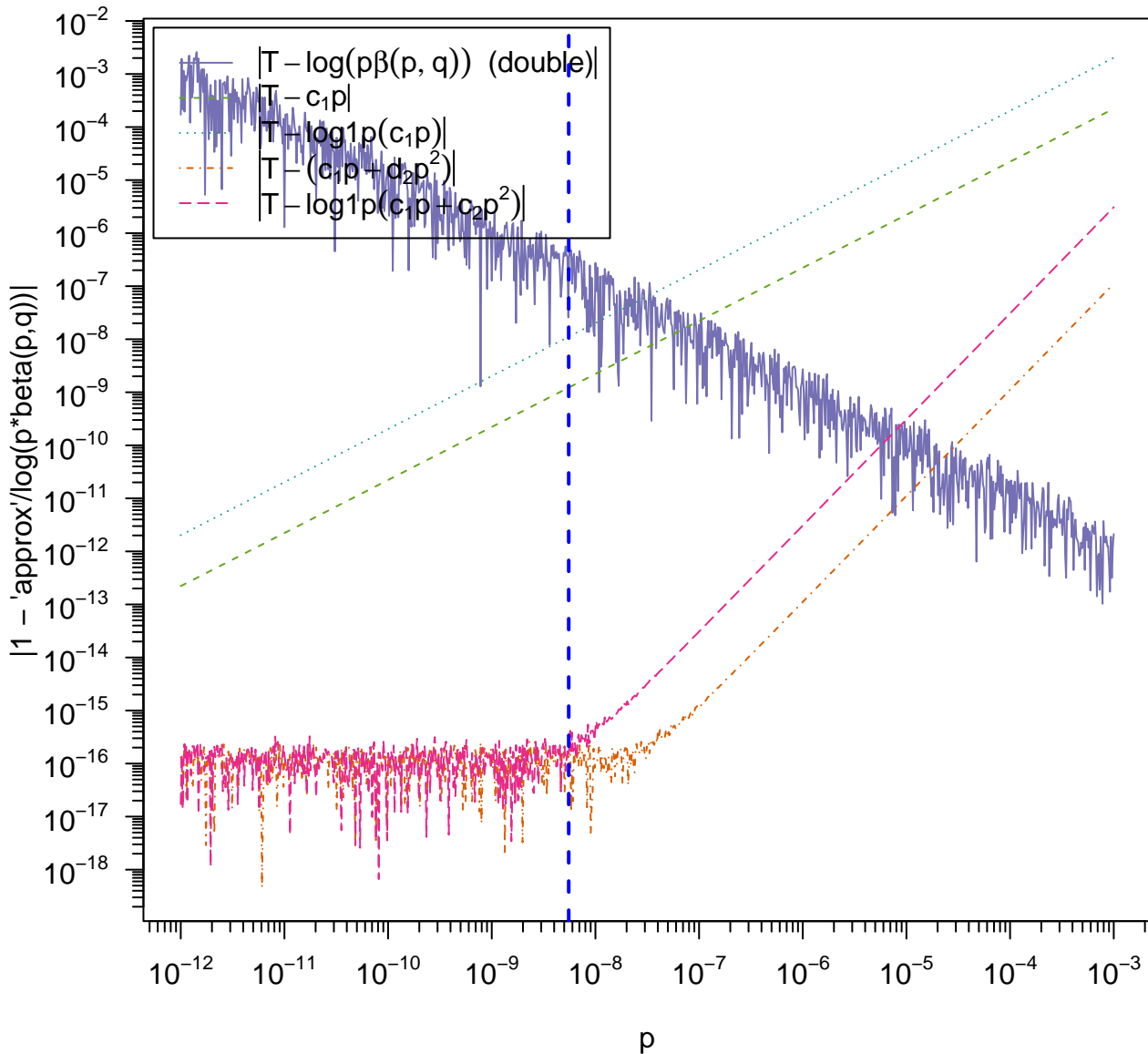
Accurately computing  $\log(p \cdot B(p, q))$  for  $p \rightarrow 0$ , ( $q = 1e-04$ )



# $\log(p \cdot \beta(p, q))$ RELATIVE approx. errors, $q = 21$



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$\Gamma(x)$ 