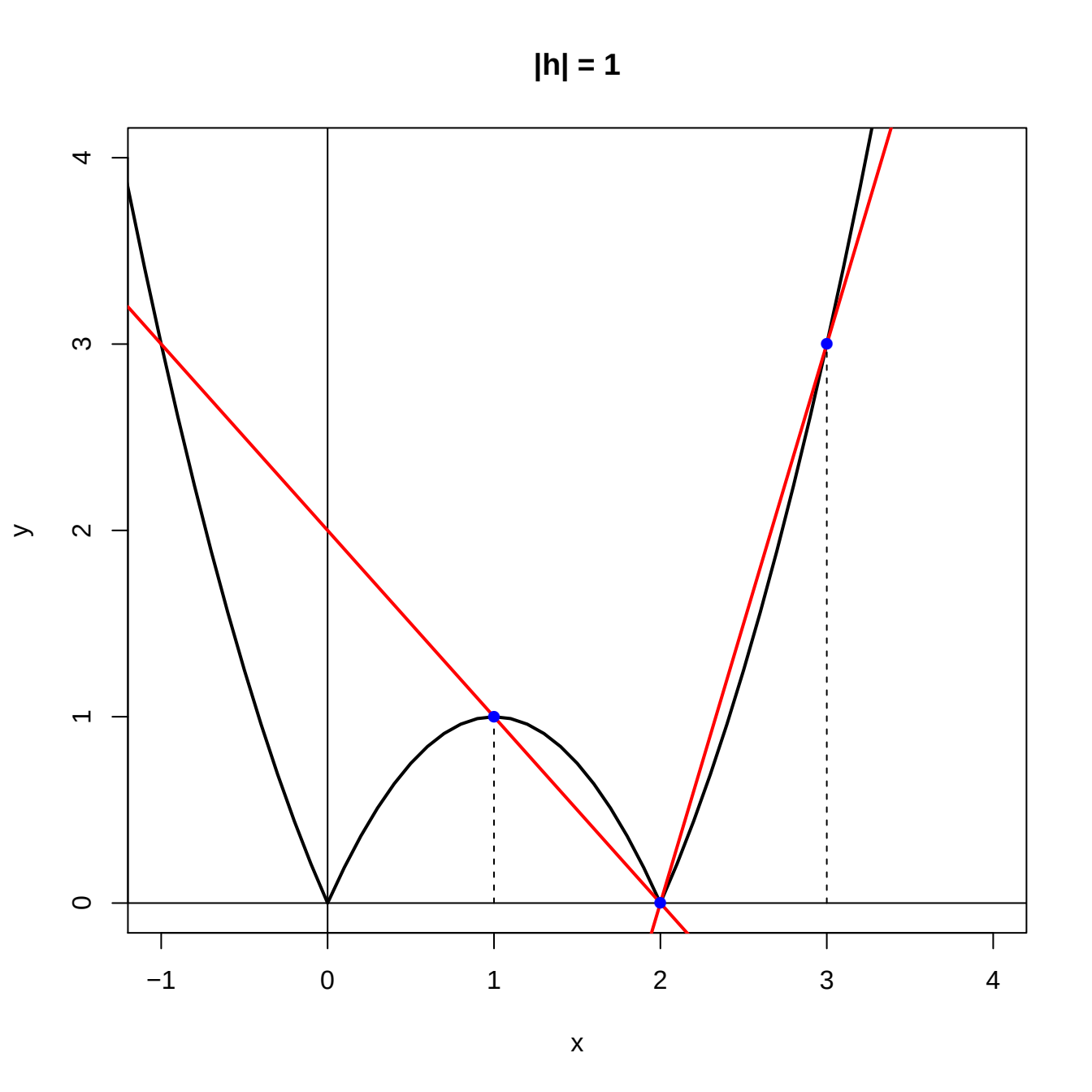
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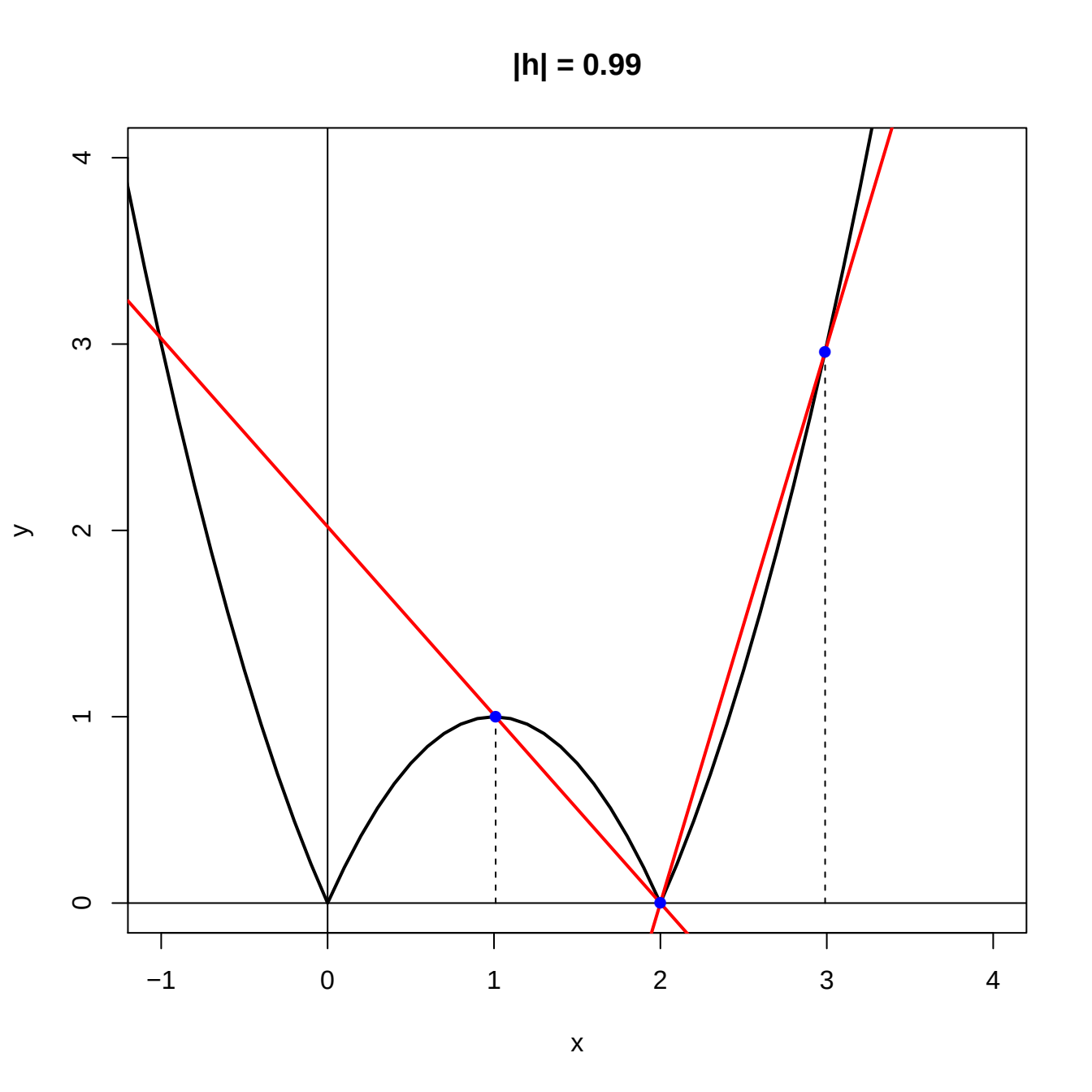
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.99
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x
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4
−1
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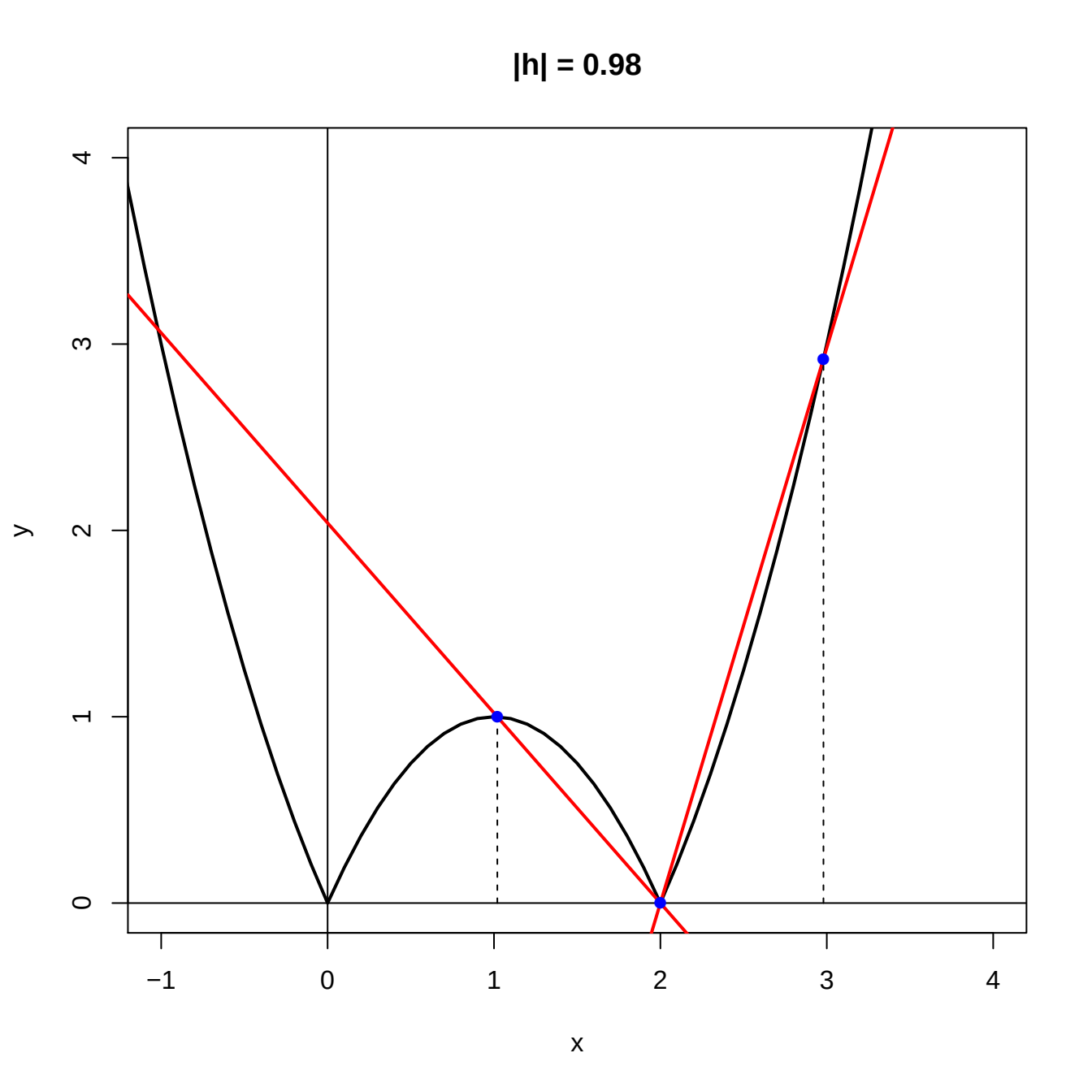
1
2
3
4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x
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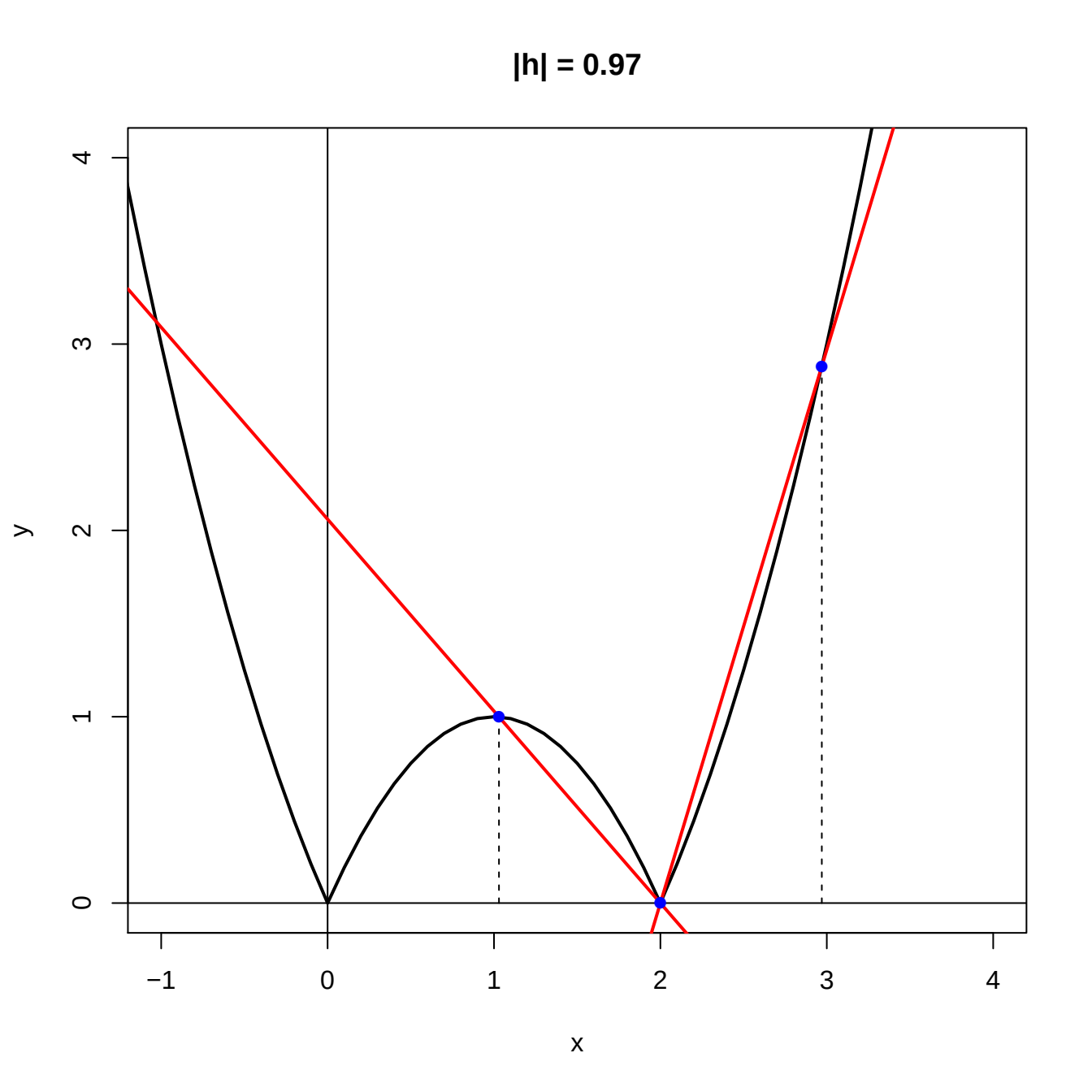
1
2
3
4


|h| = 0.97
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x
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1
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3
4
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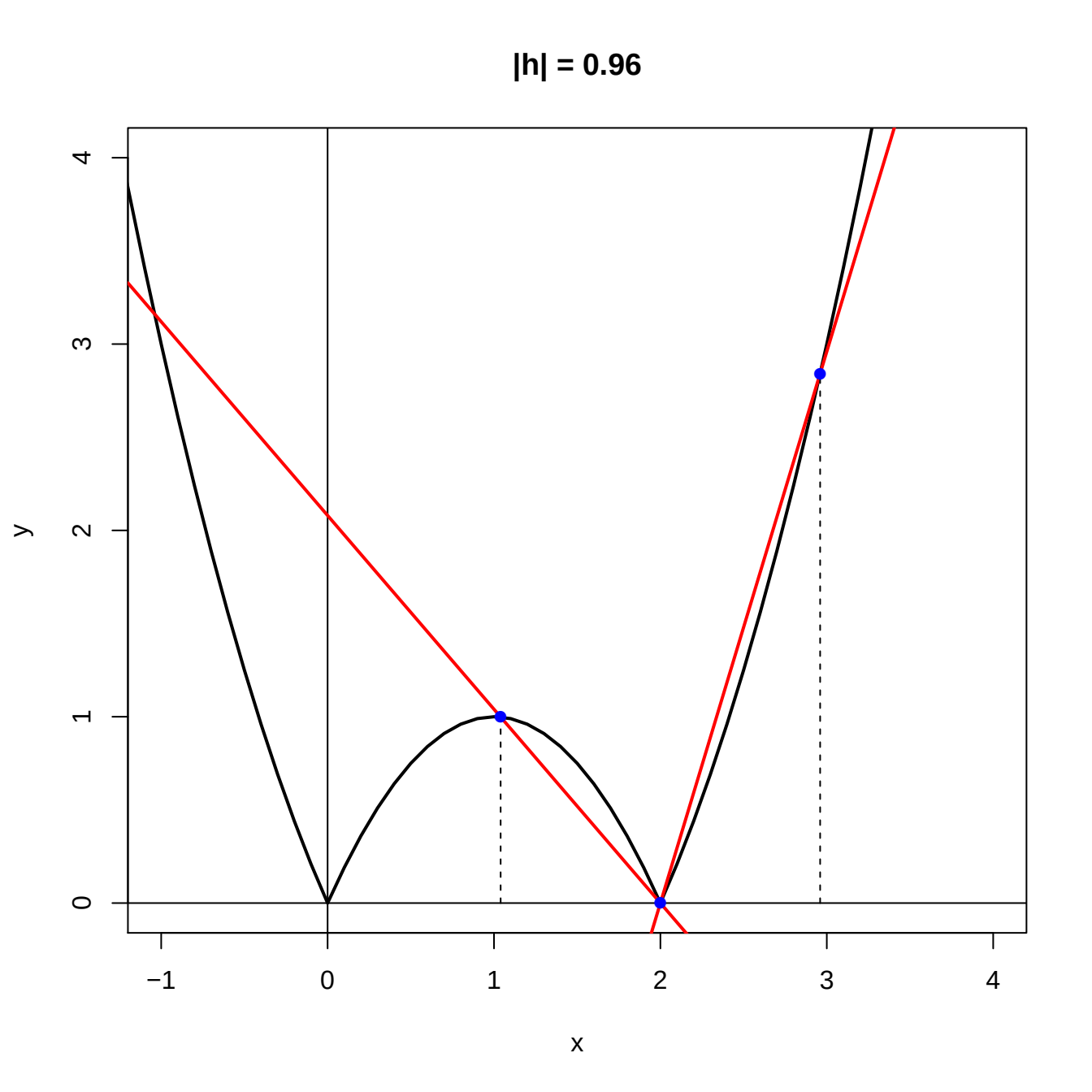
1
2
3
4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x
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1
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3
4
−1
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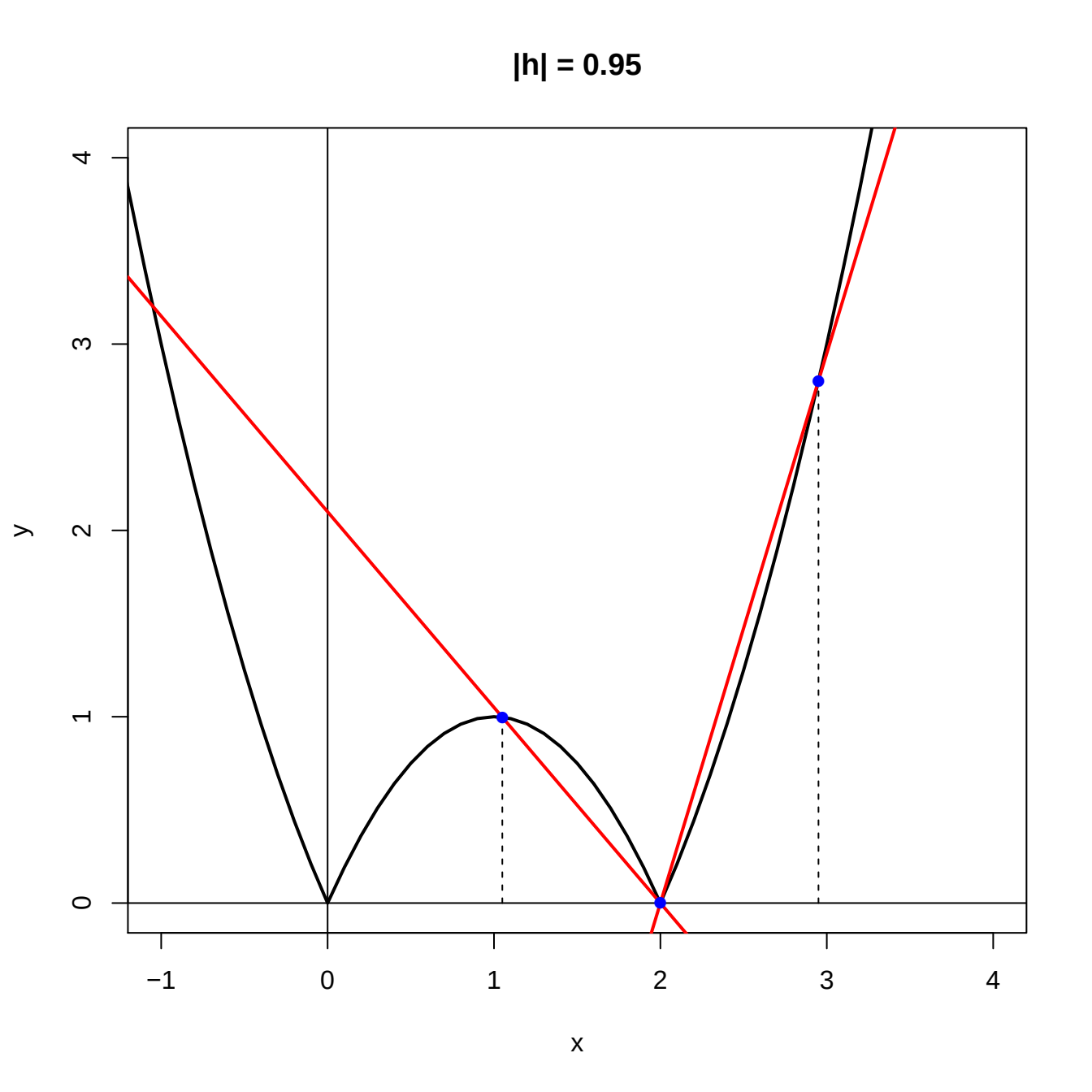
1
2
3
4


|h| = 0.95
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x
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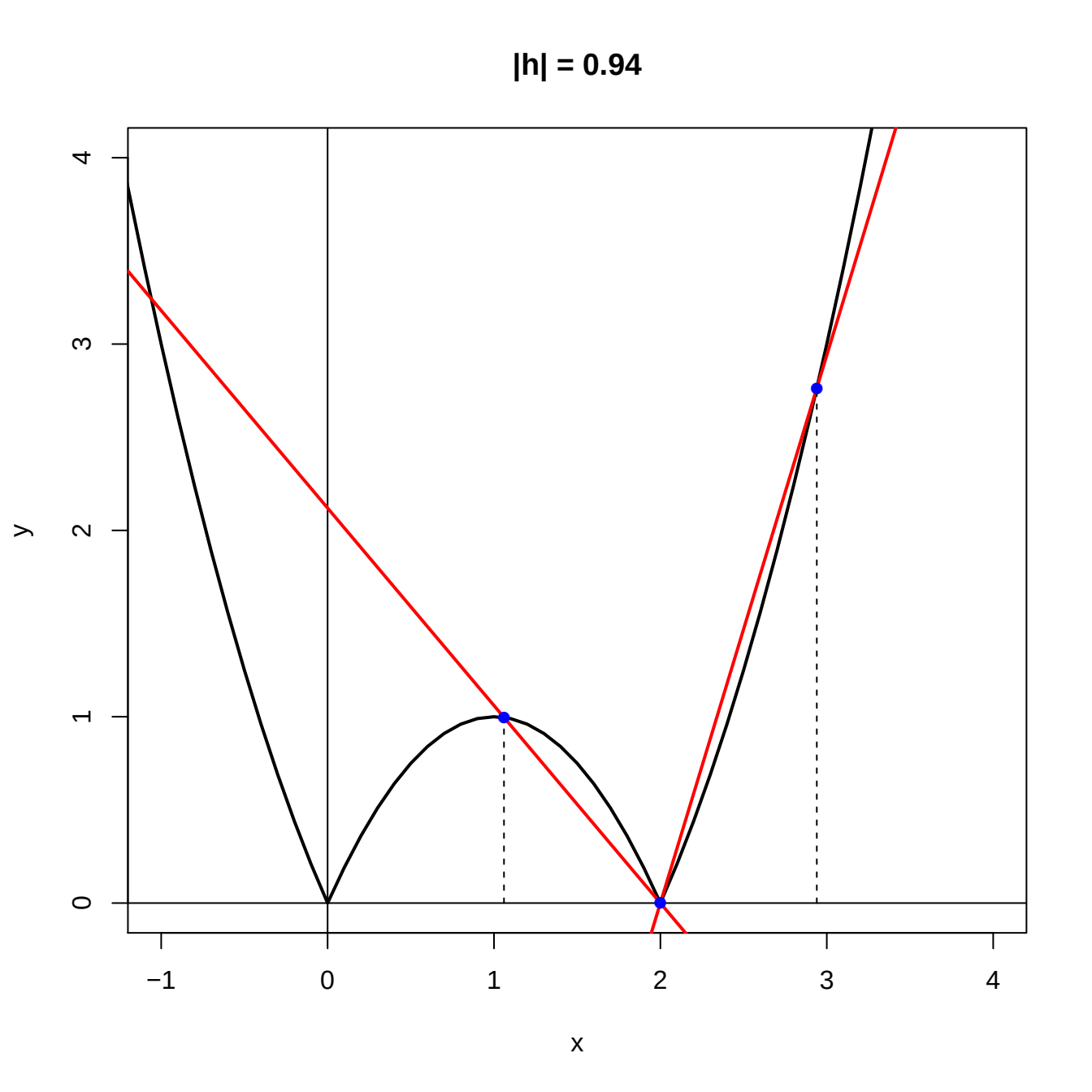
1
2
3
4
−1
0
1
2
3
4


|h| = 0.94
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x
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1
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3
4
−1
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1
2
3
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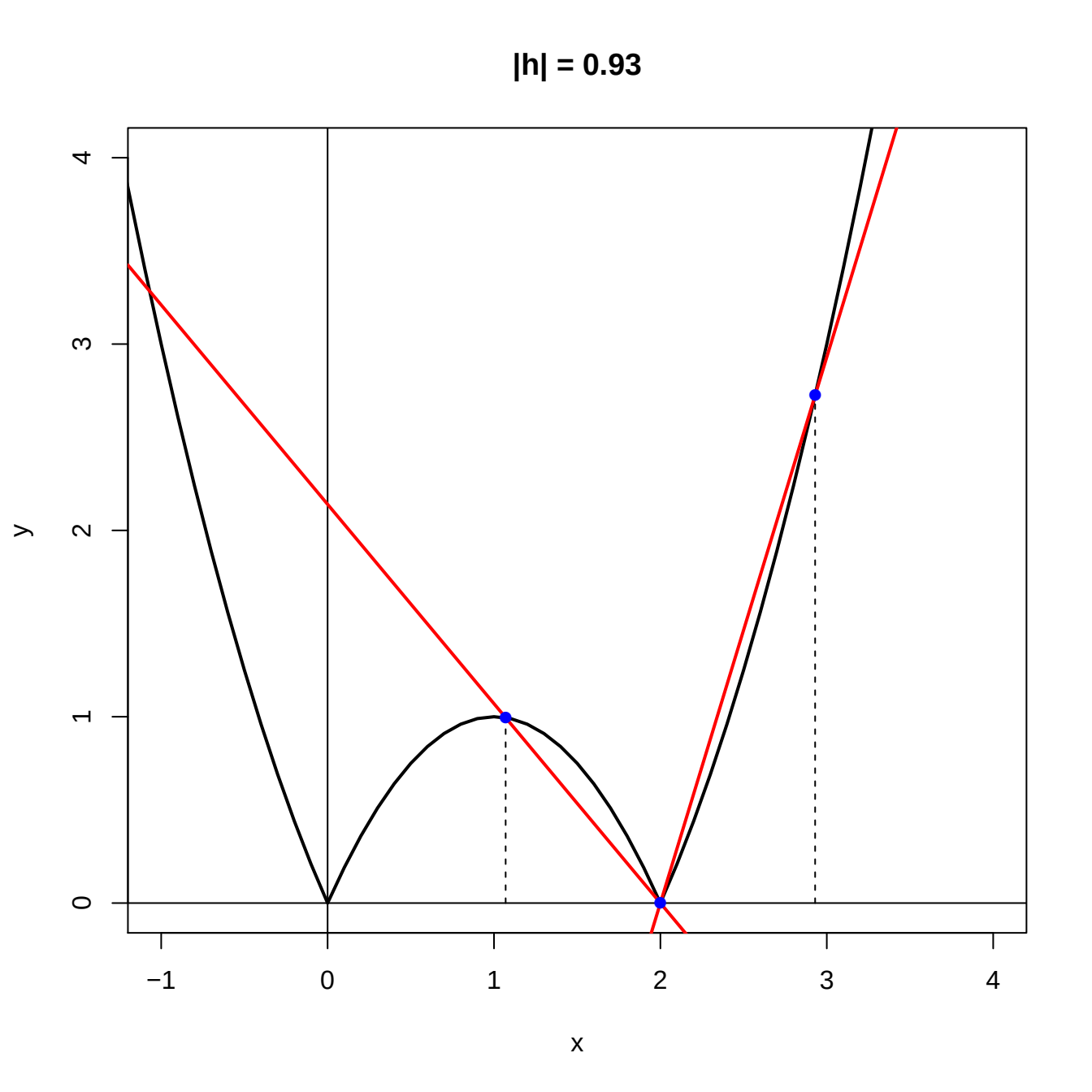
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x
0
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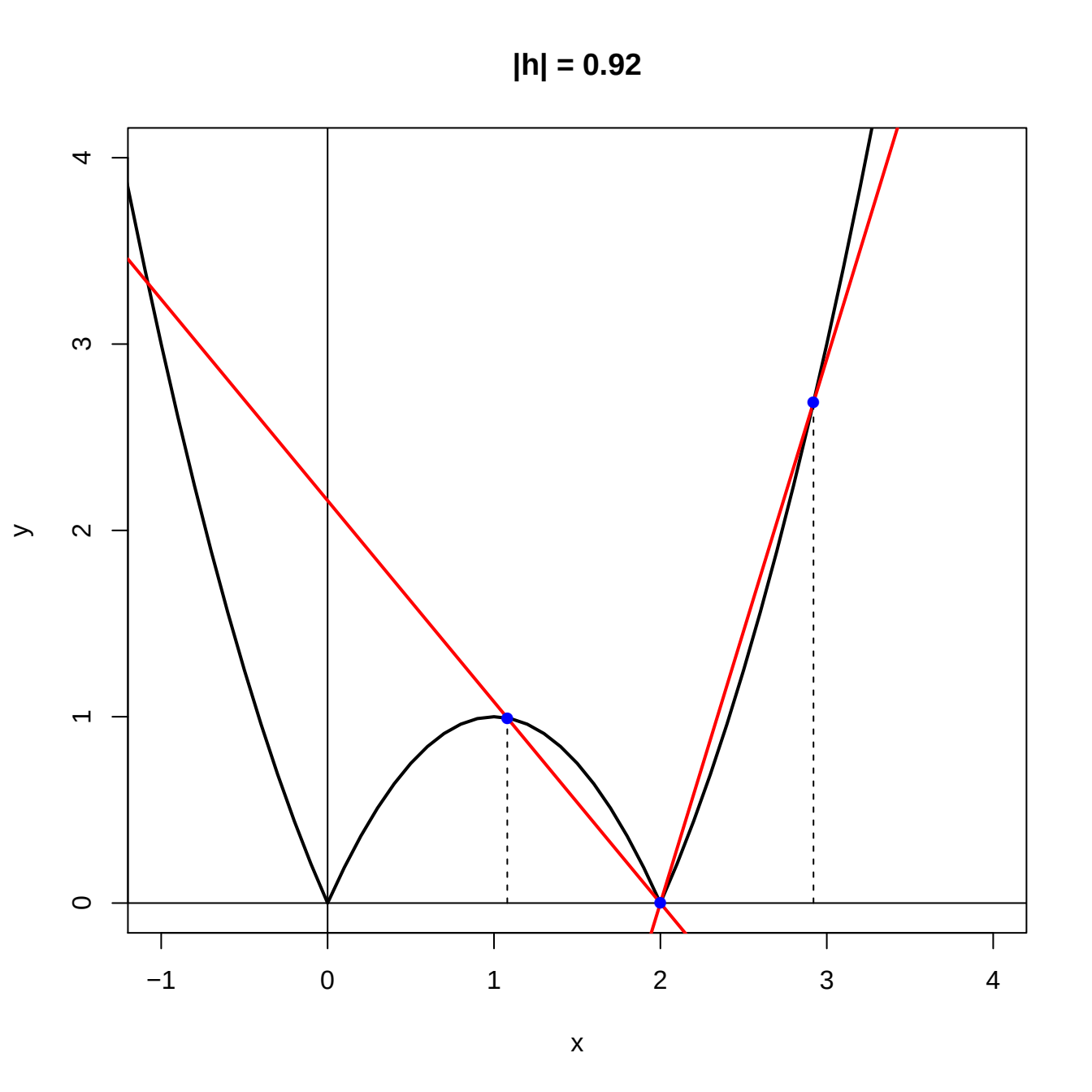
3
4
−1
0
1
2
3
4


|h| = 0.92
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x
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4
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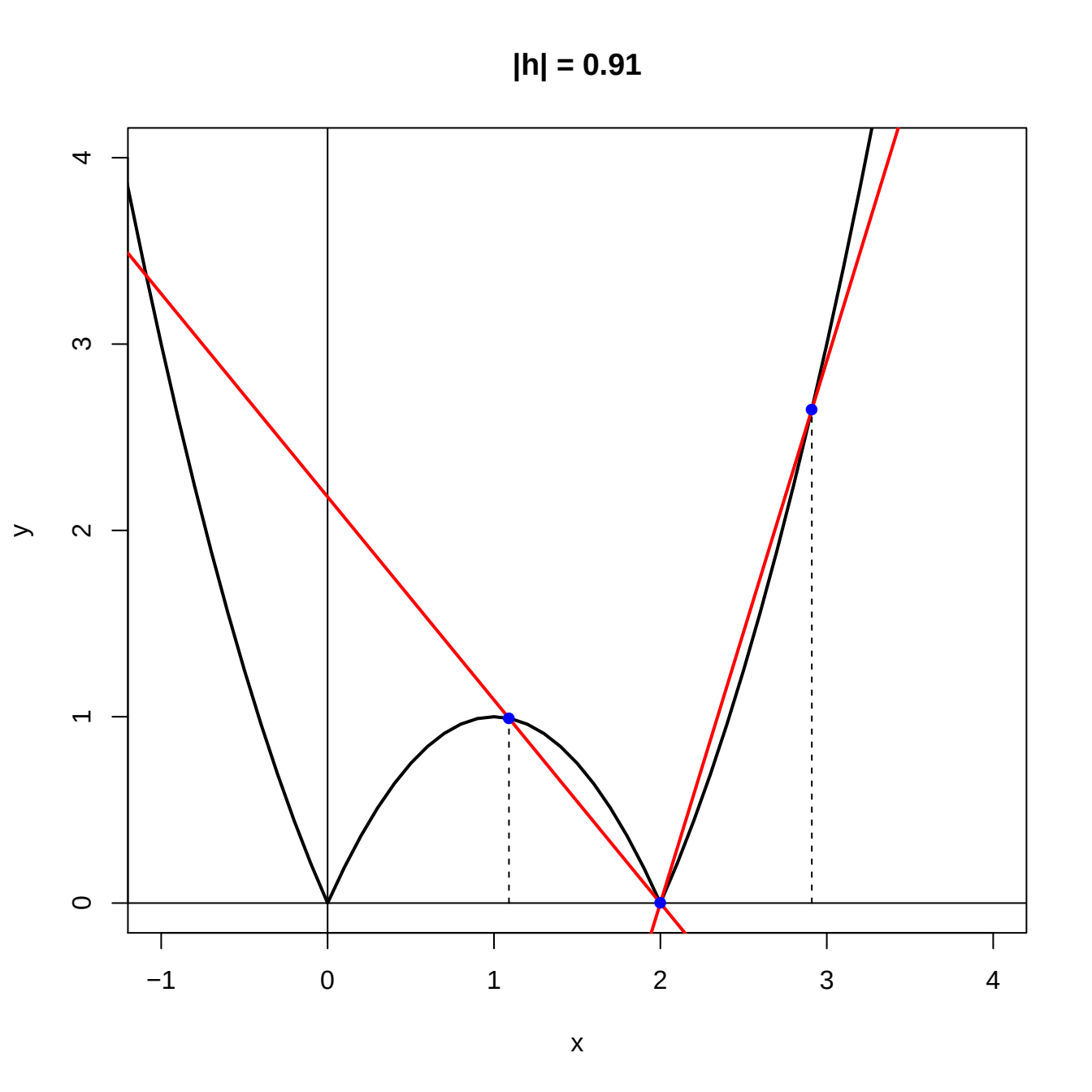
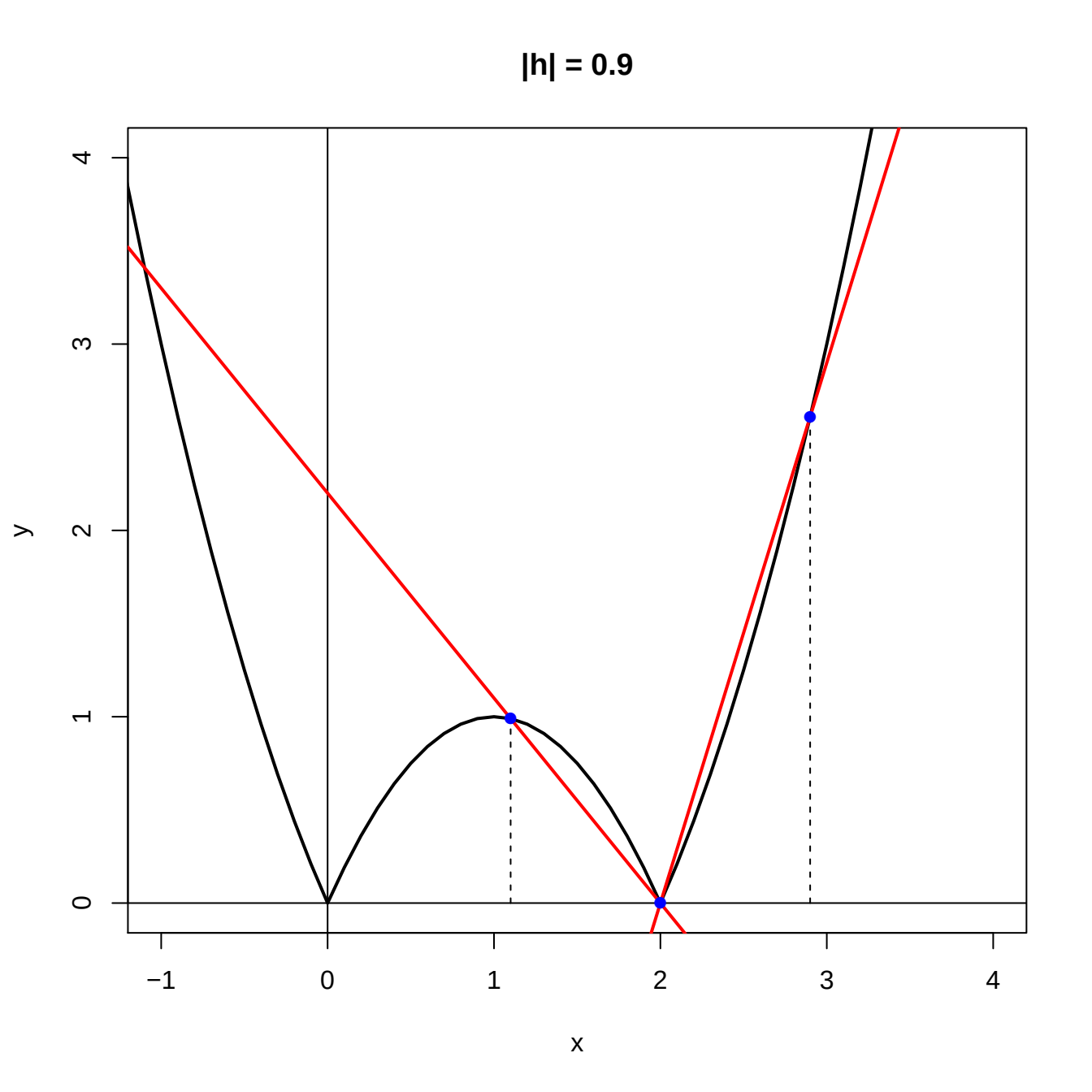
0
1
2
3
4


|h| = 0.91
y
x
0
1
2
3
4
−1
0
1
2
3
4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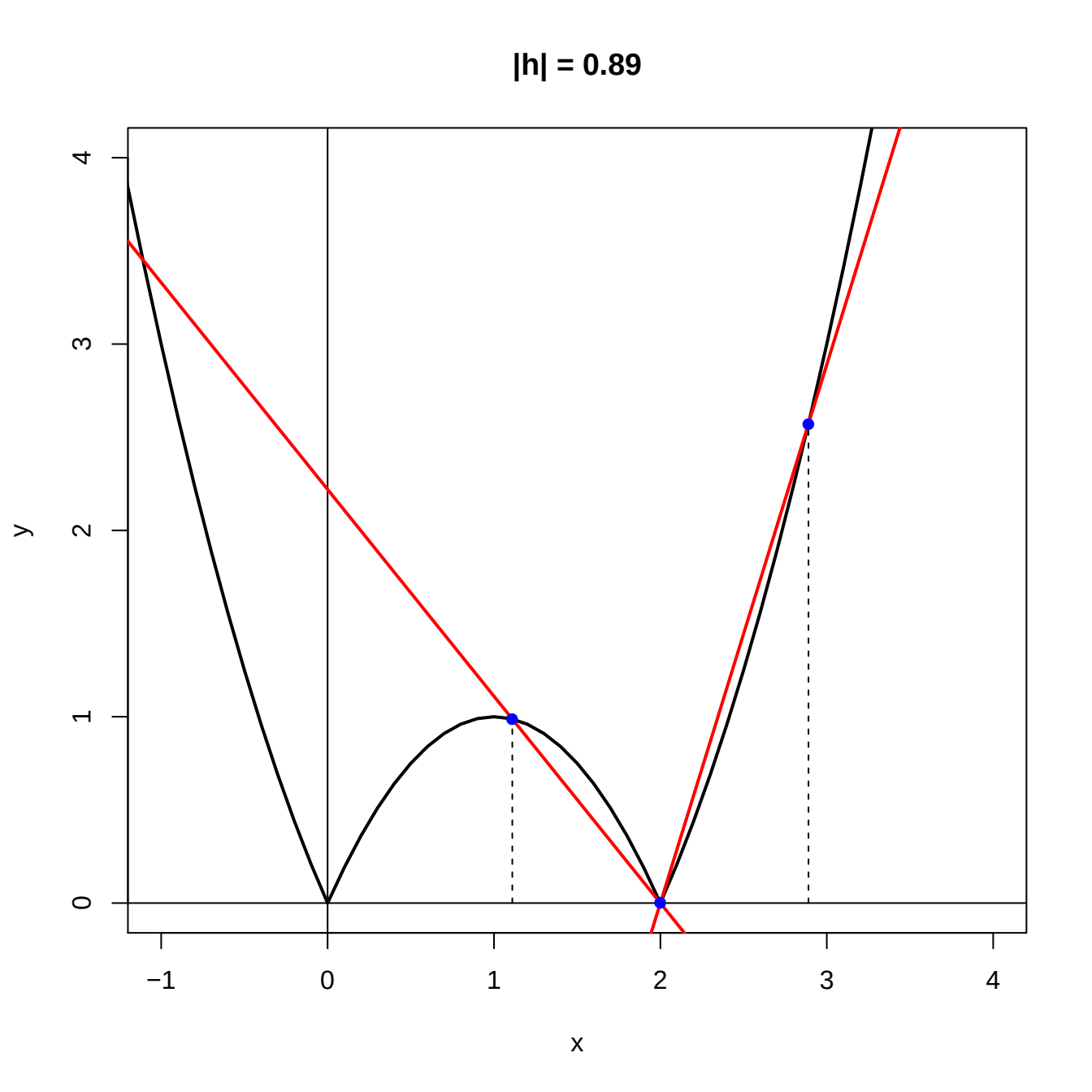
y
x
0
1
2
3
4
−1
0
1
2
3
4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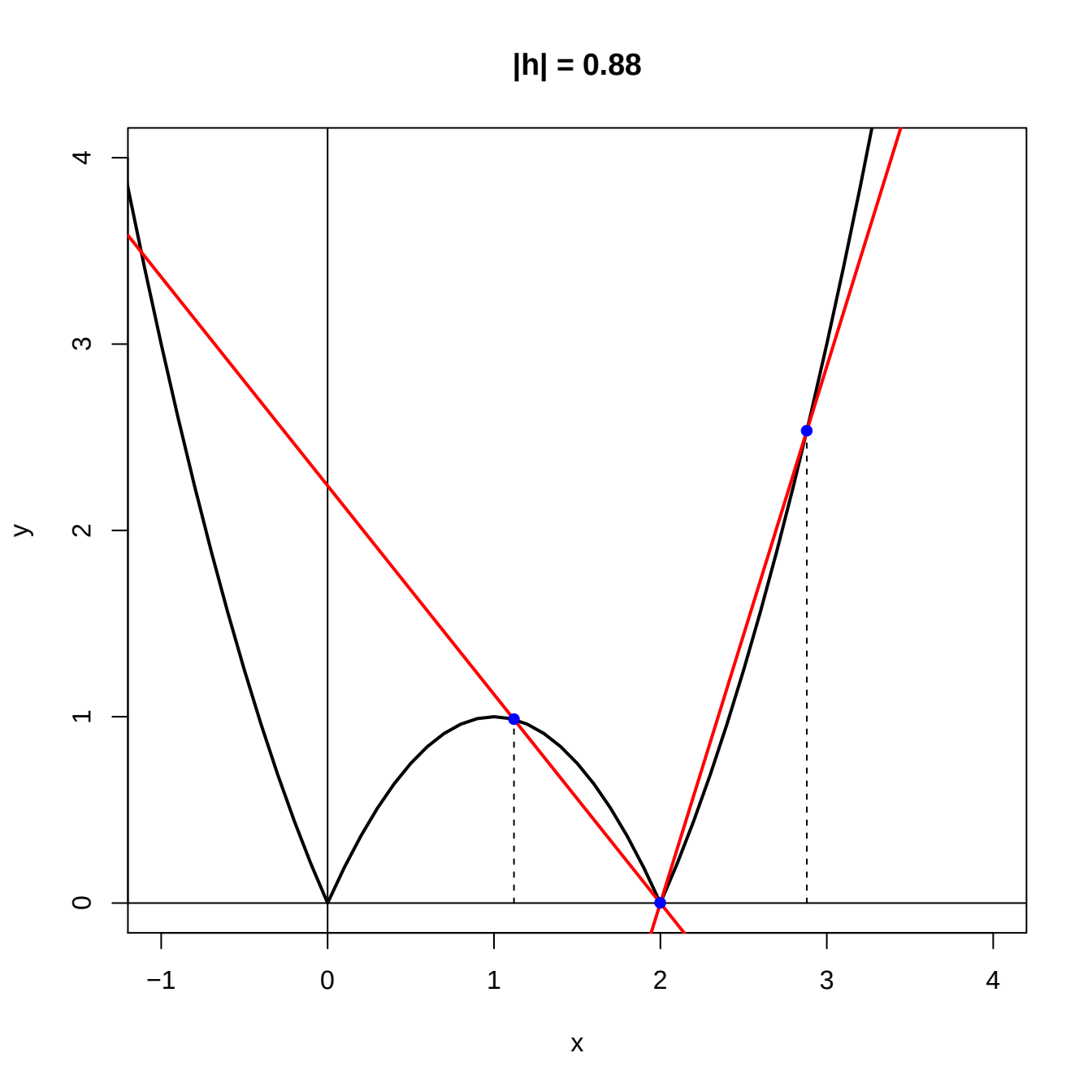
y
x
0
1
2
3
4
−1
0
1
2
3
4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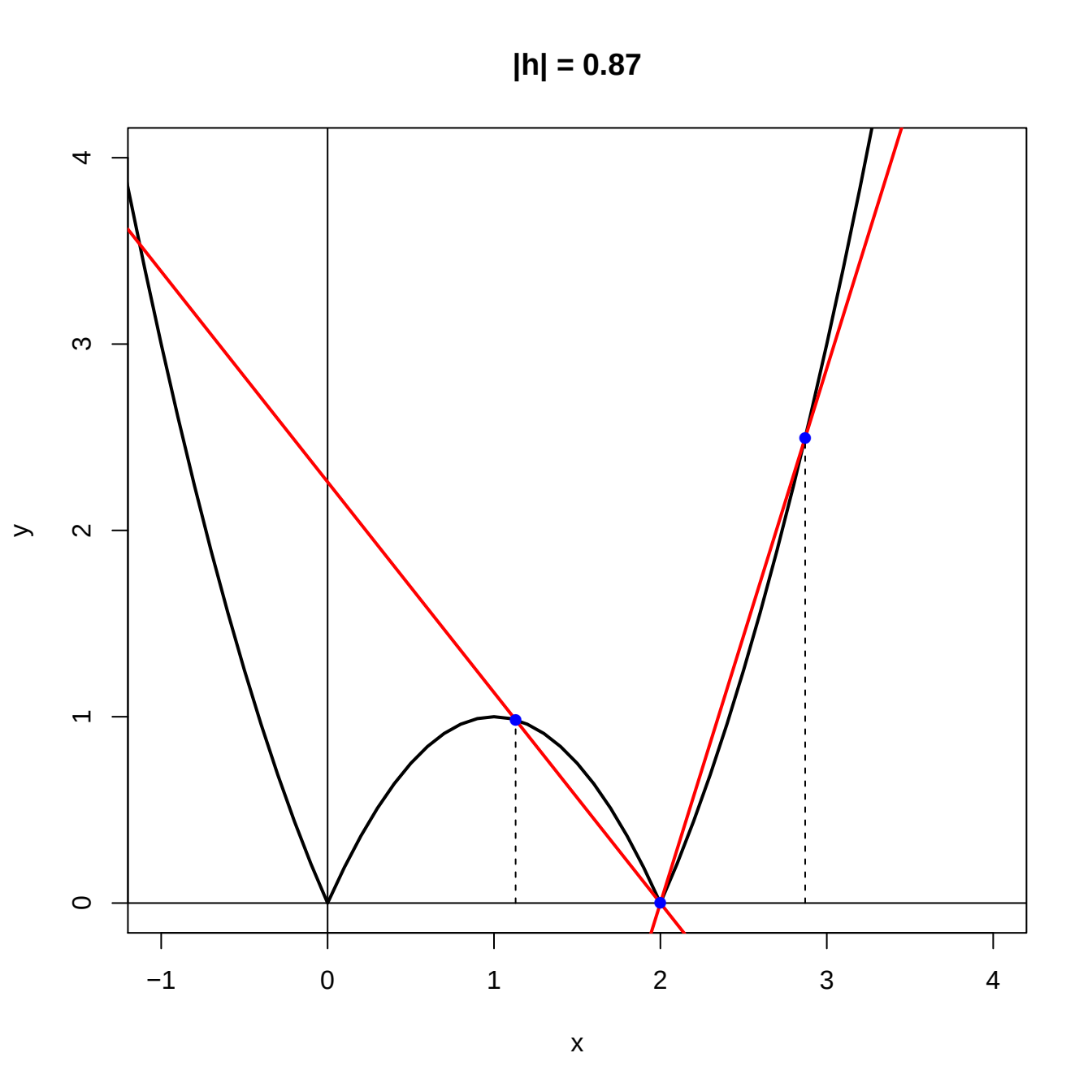
y
x
0
1
2
3
4
−1
0
1
2
3
4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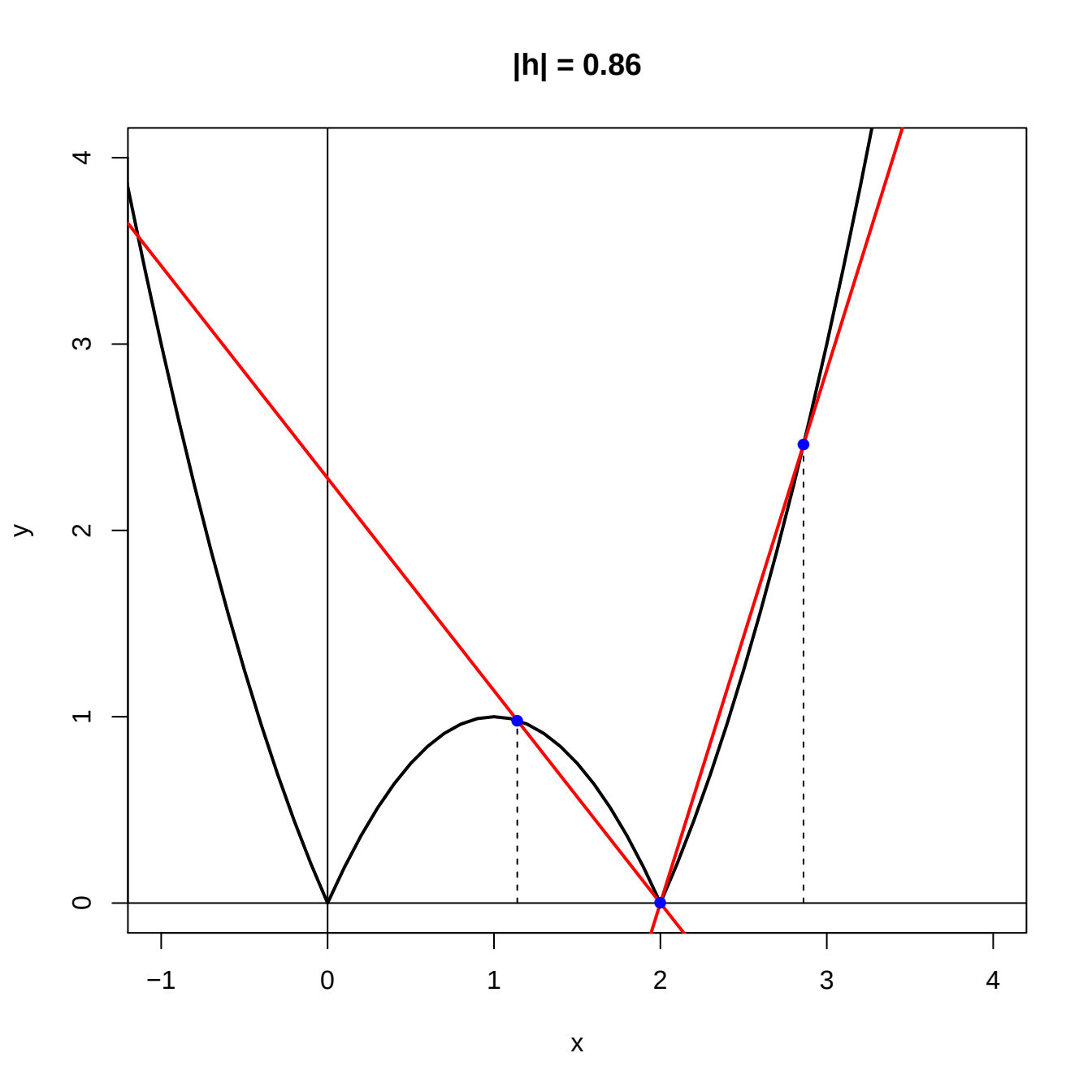
y
x
0
1
2
3
4
−1
0
1
2
3
4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y
x
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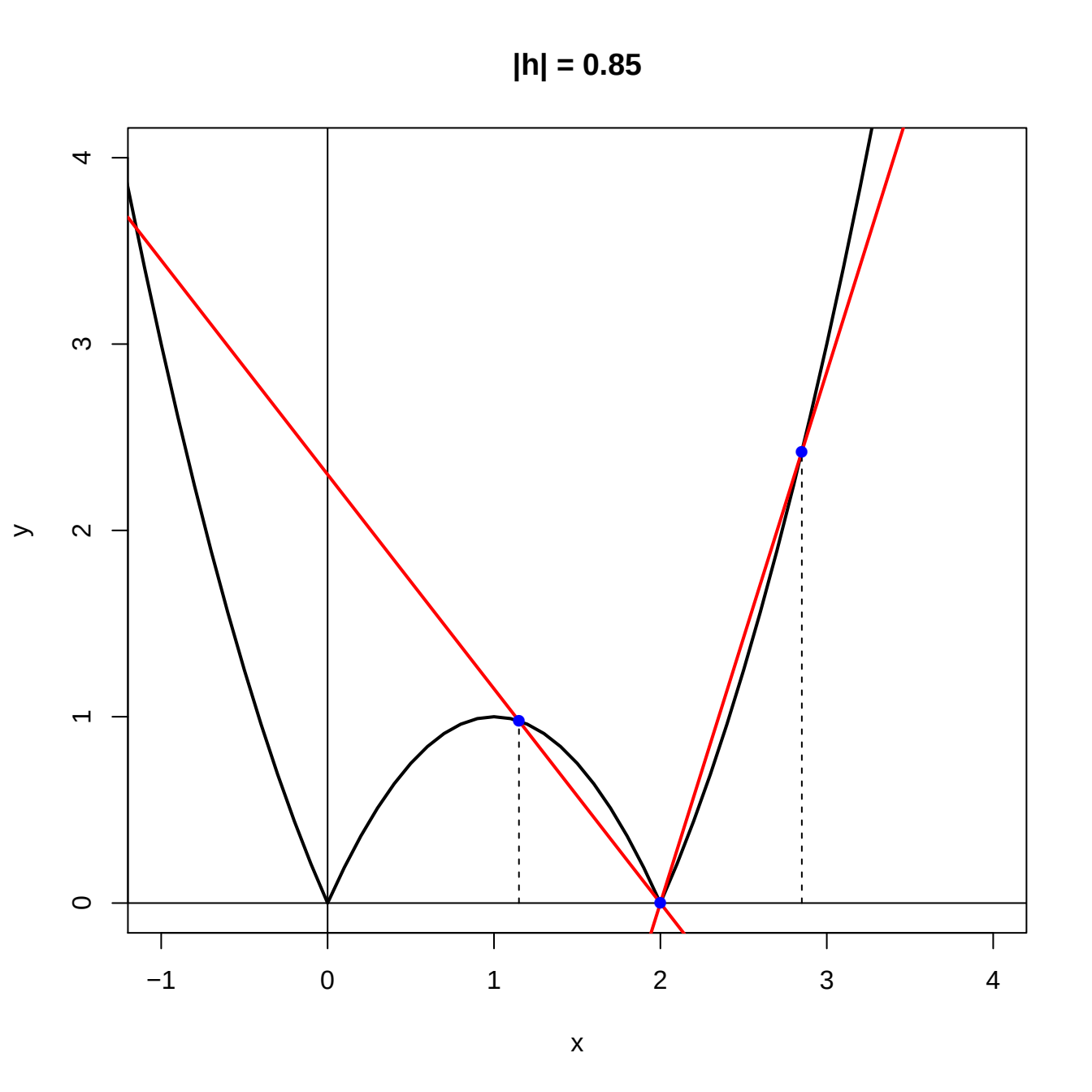
1
2
3
4
−1
0
1
2
3
4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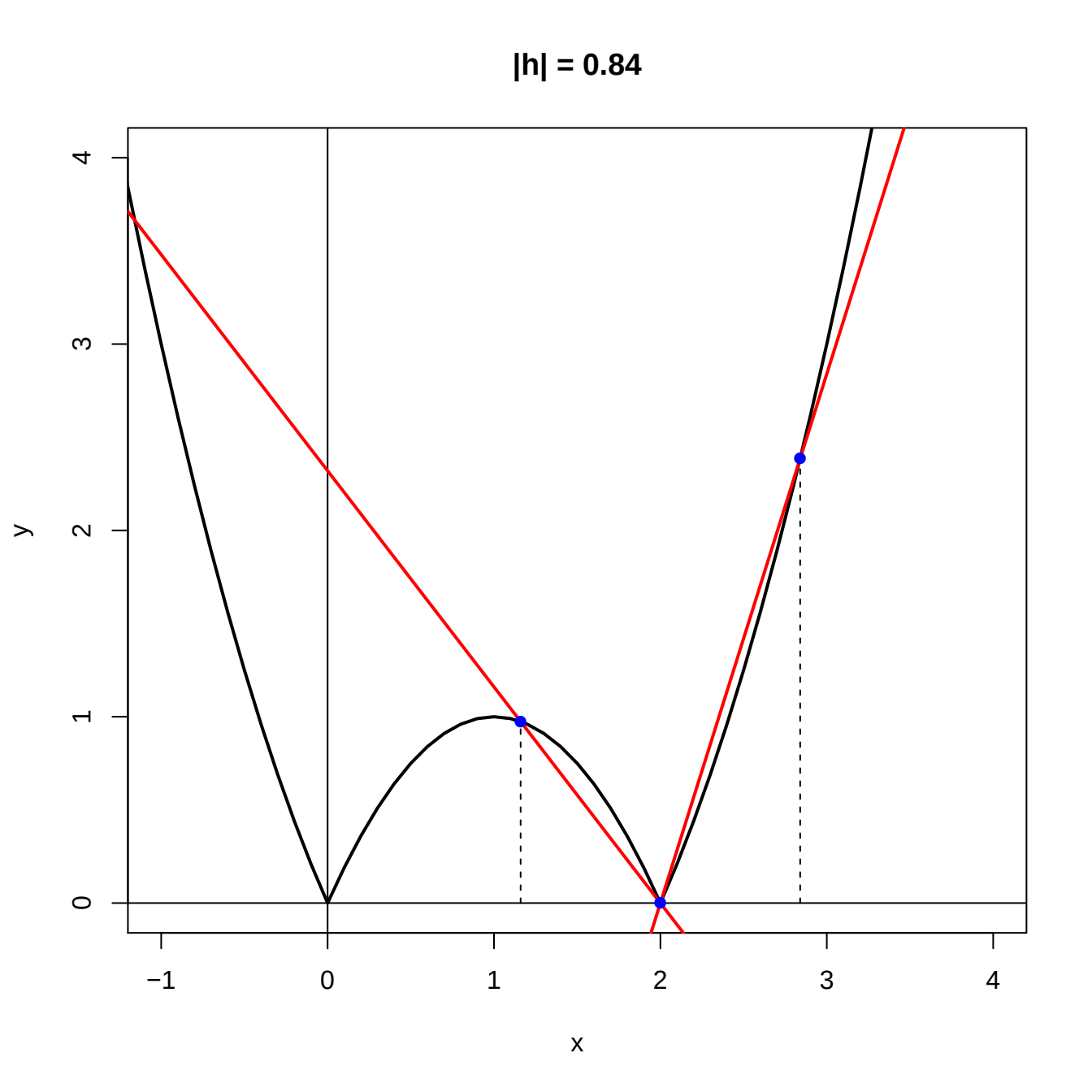
y
x
0
1
2
3
4
−1
0
1
2
3
4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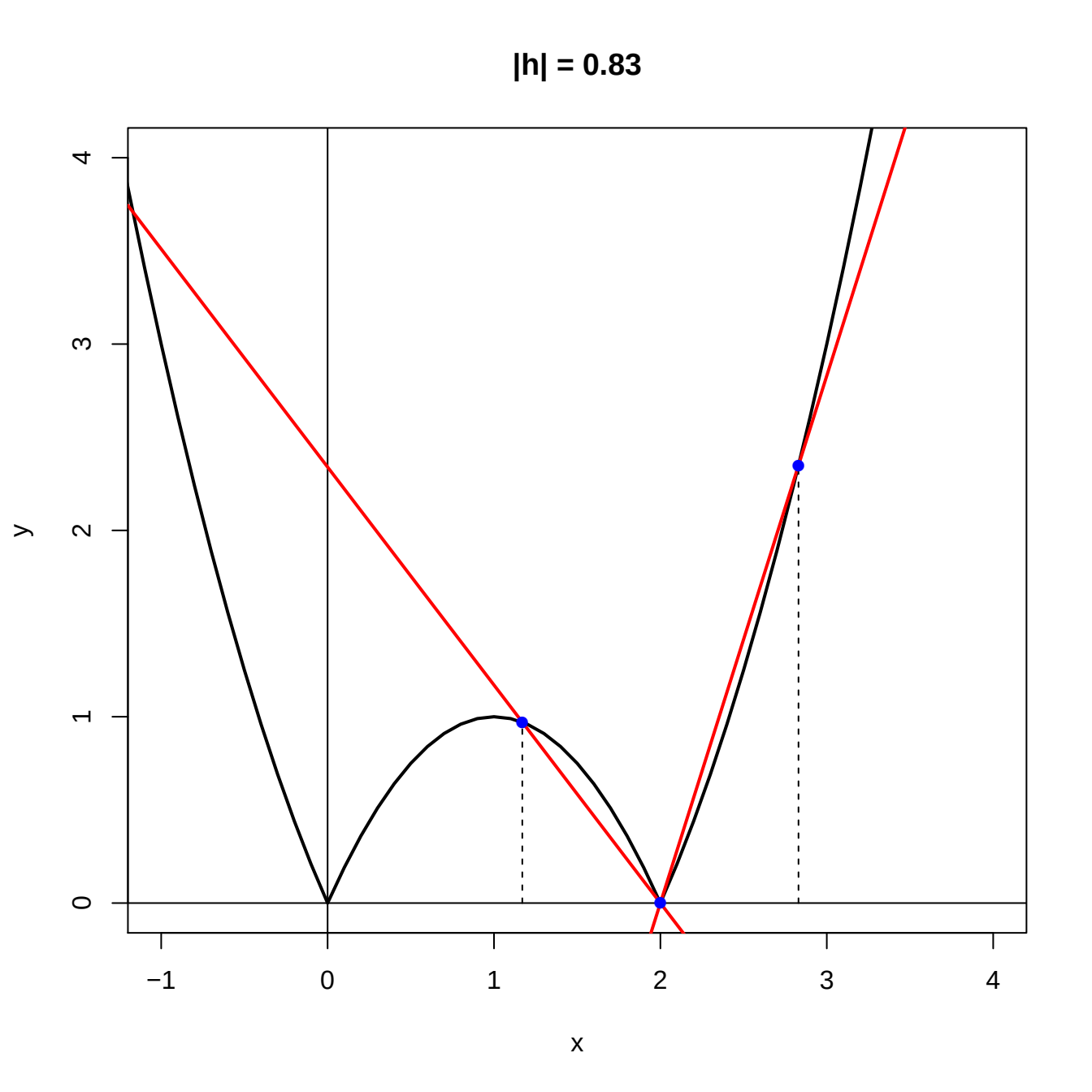
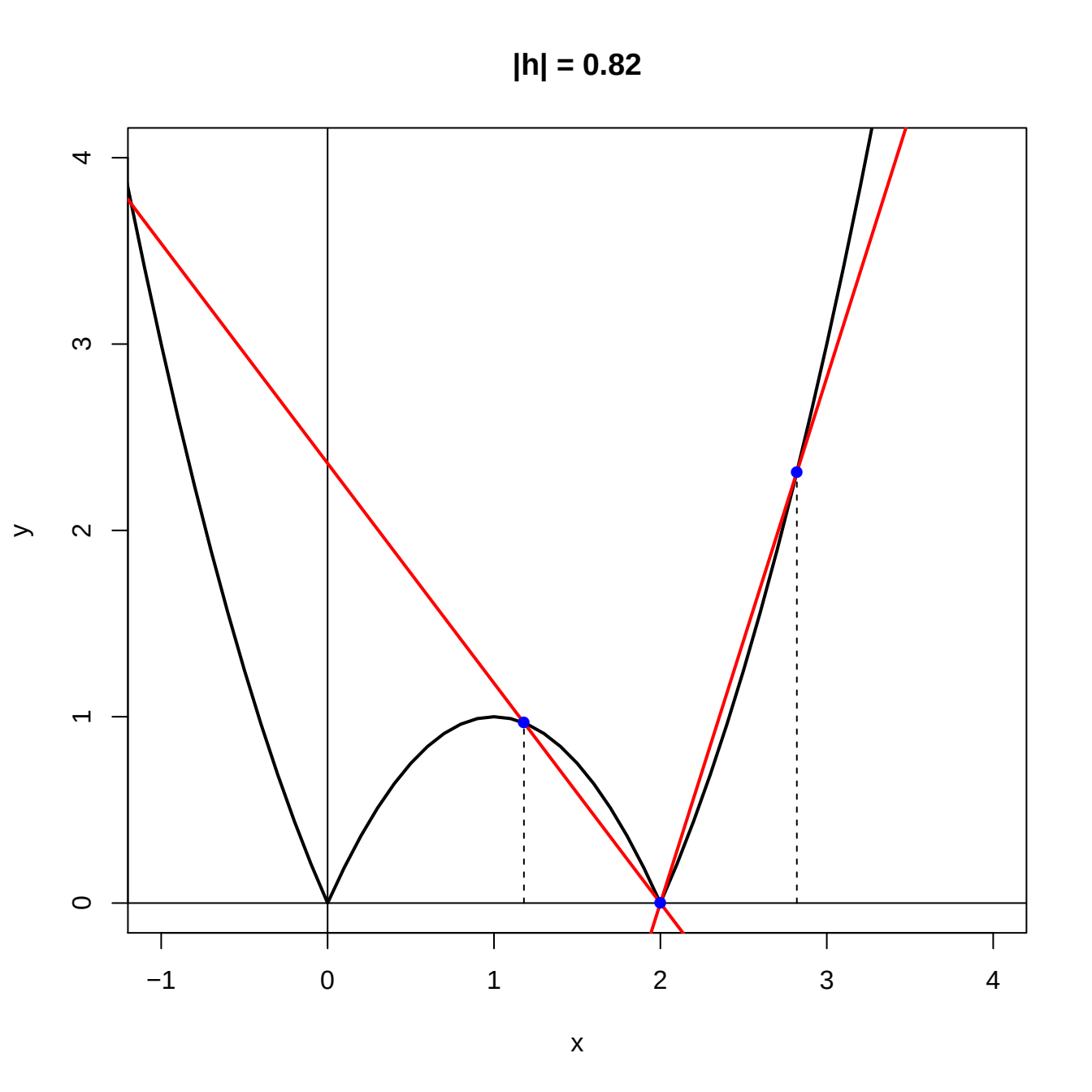
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.83
y
x
0
1
2
3
4
−1
0
1
2
3
4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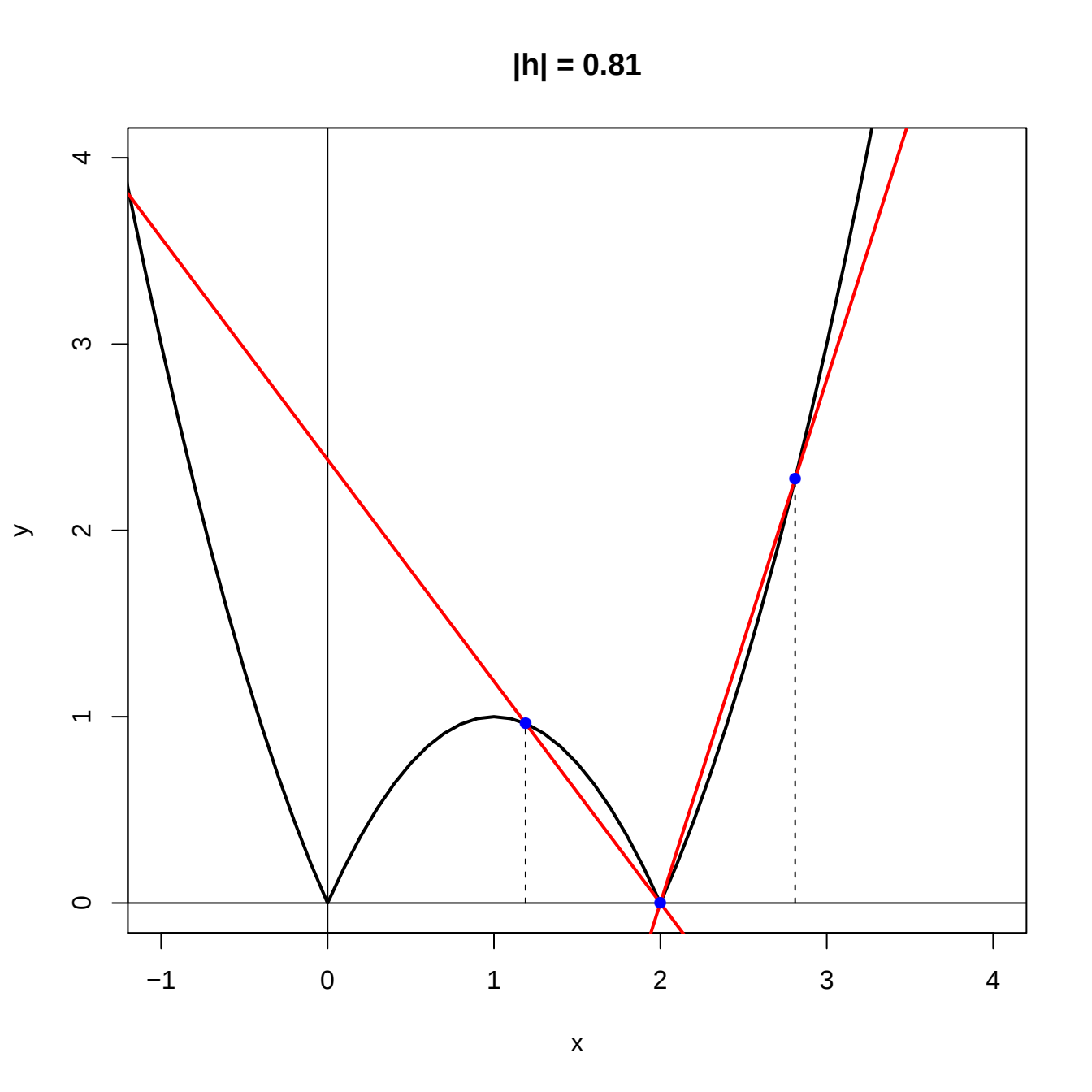
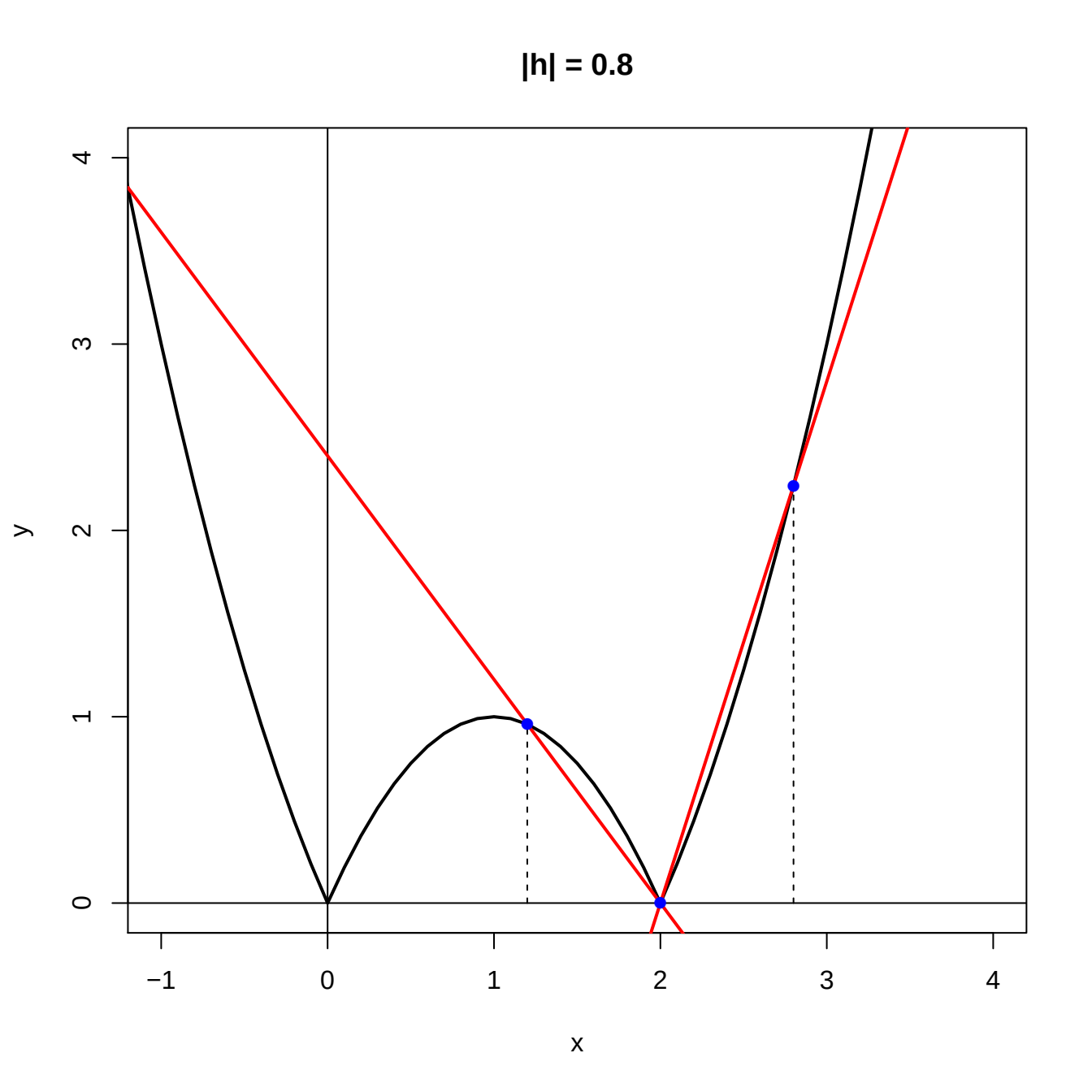
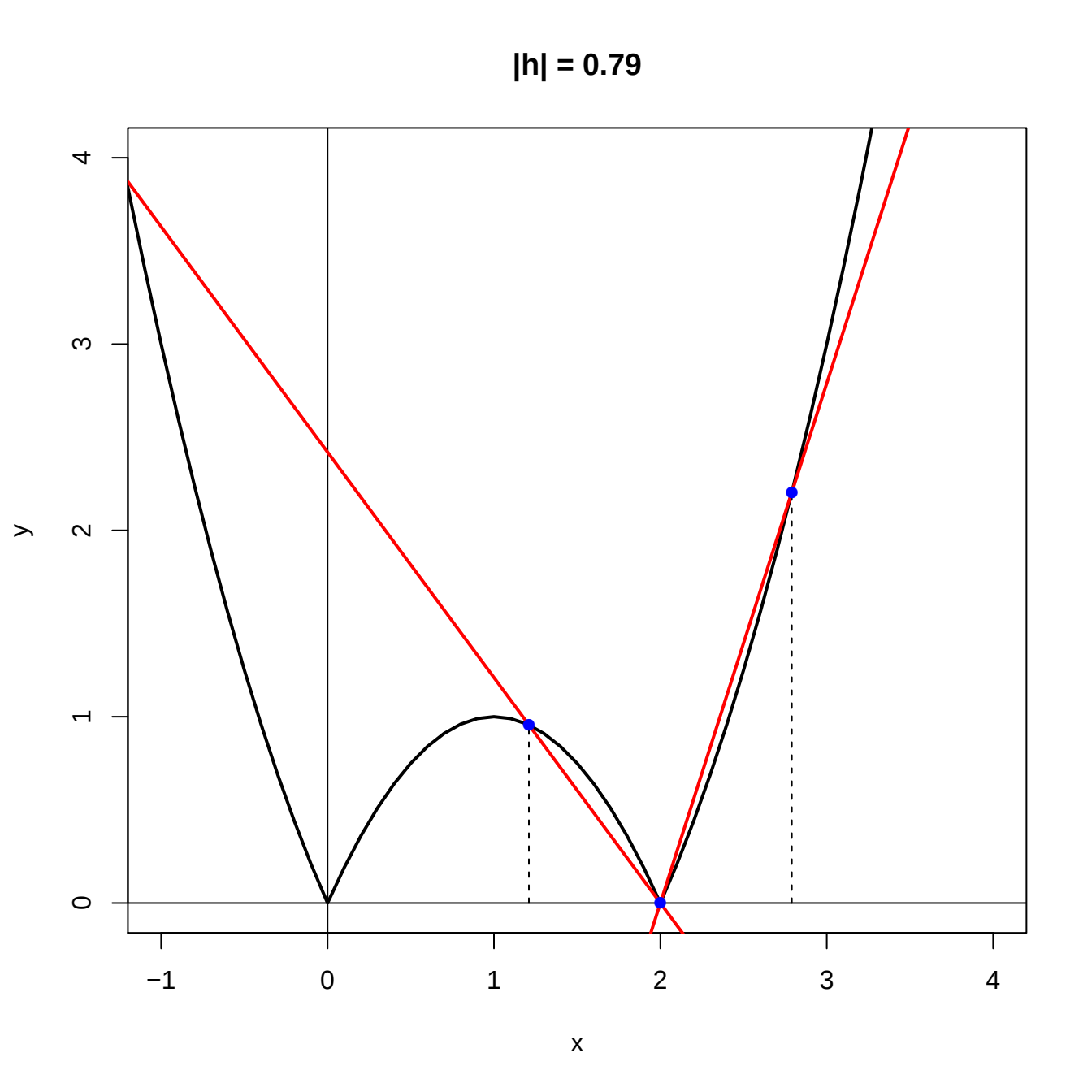
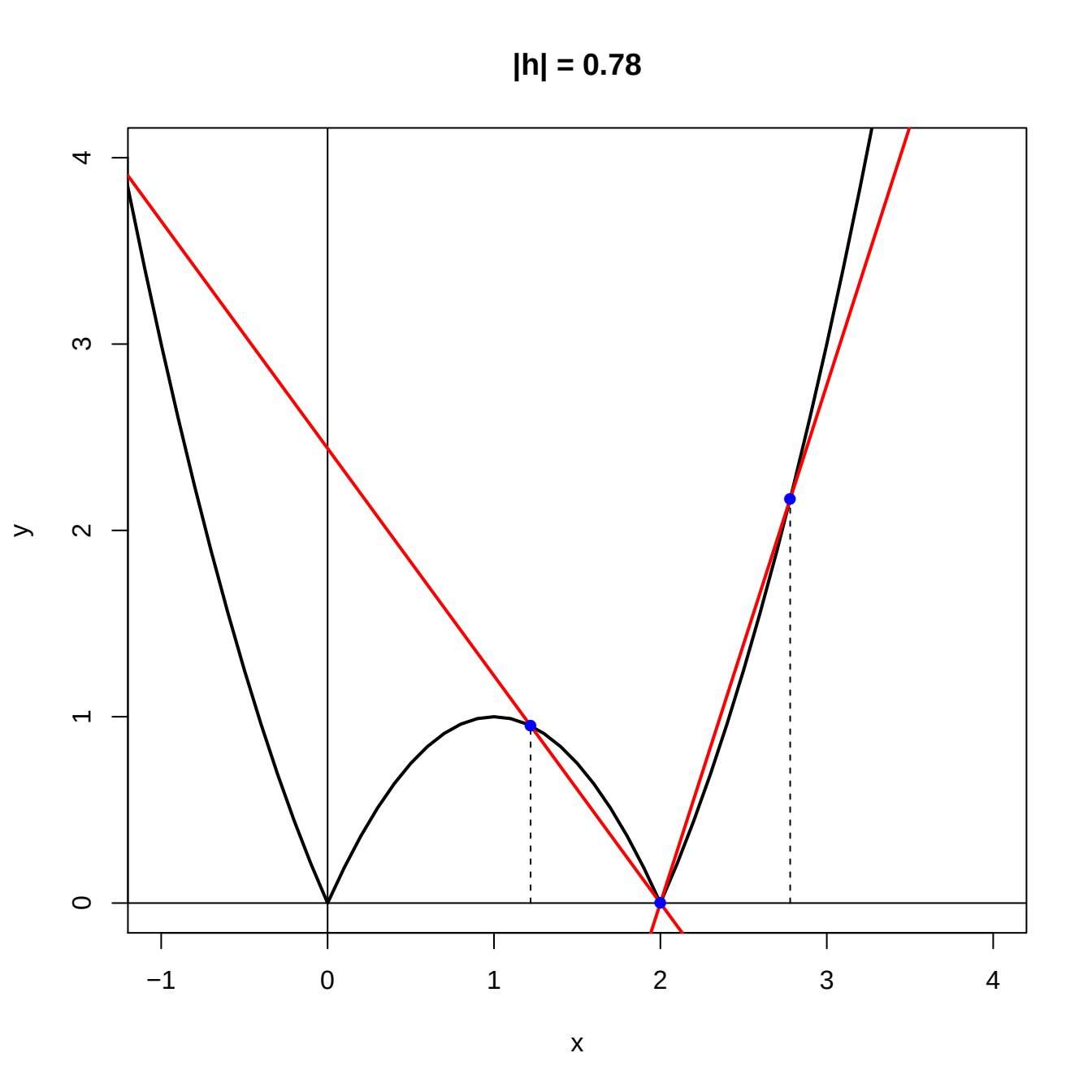
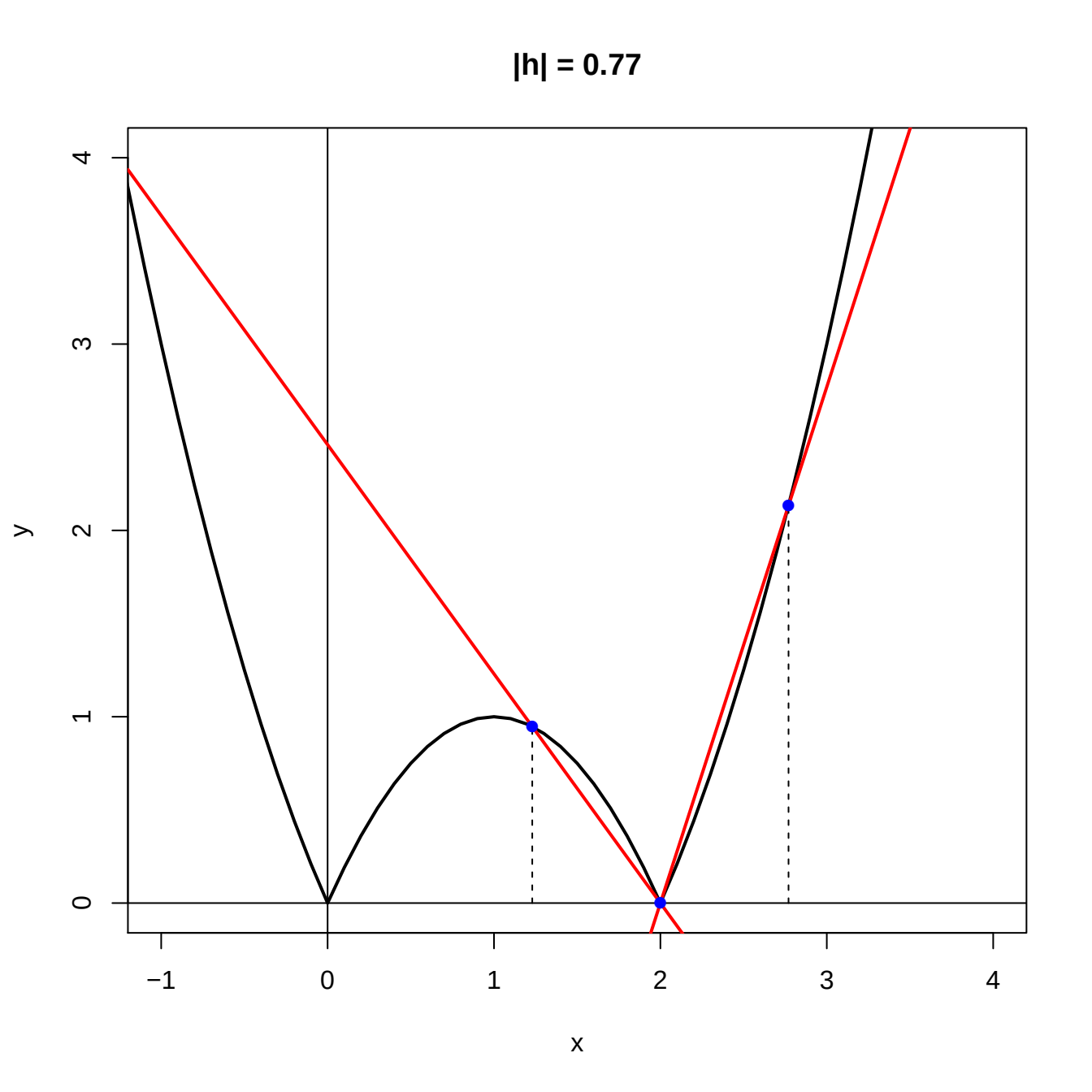
y
x
0
1
2
3
4
−1
0
1
2
3
4

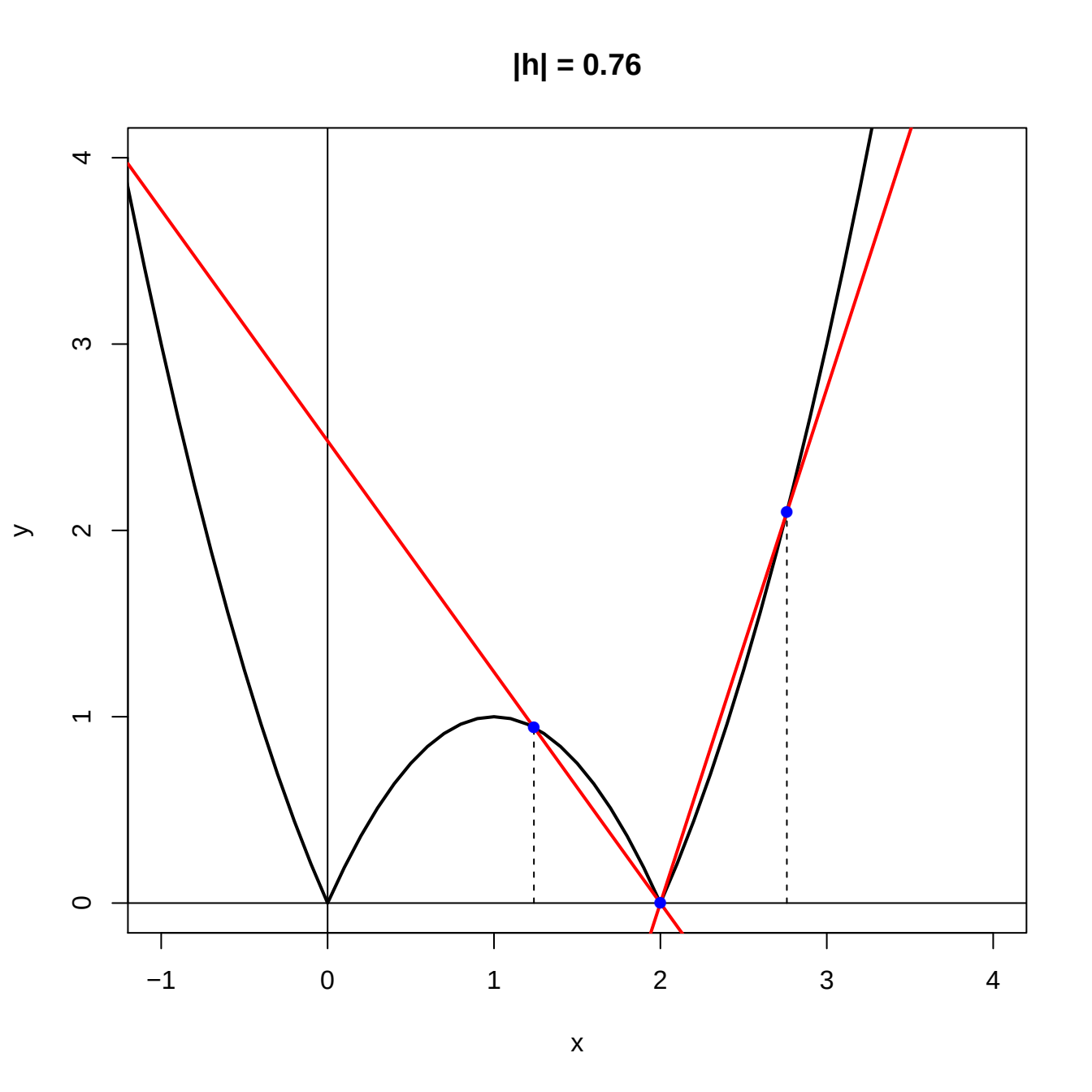

|h| = 0.81
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.8
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.79
y
x
4
3
2
1
0
−1
0
1
2
3
4


|h| = 0.78
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.77
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.76
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x
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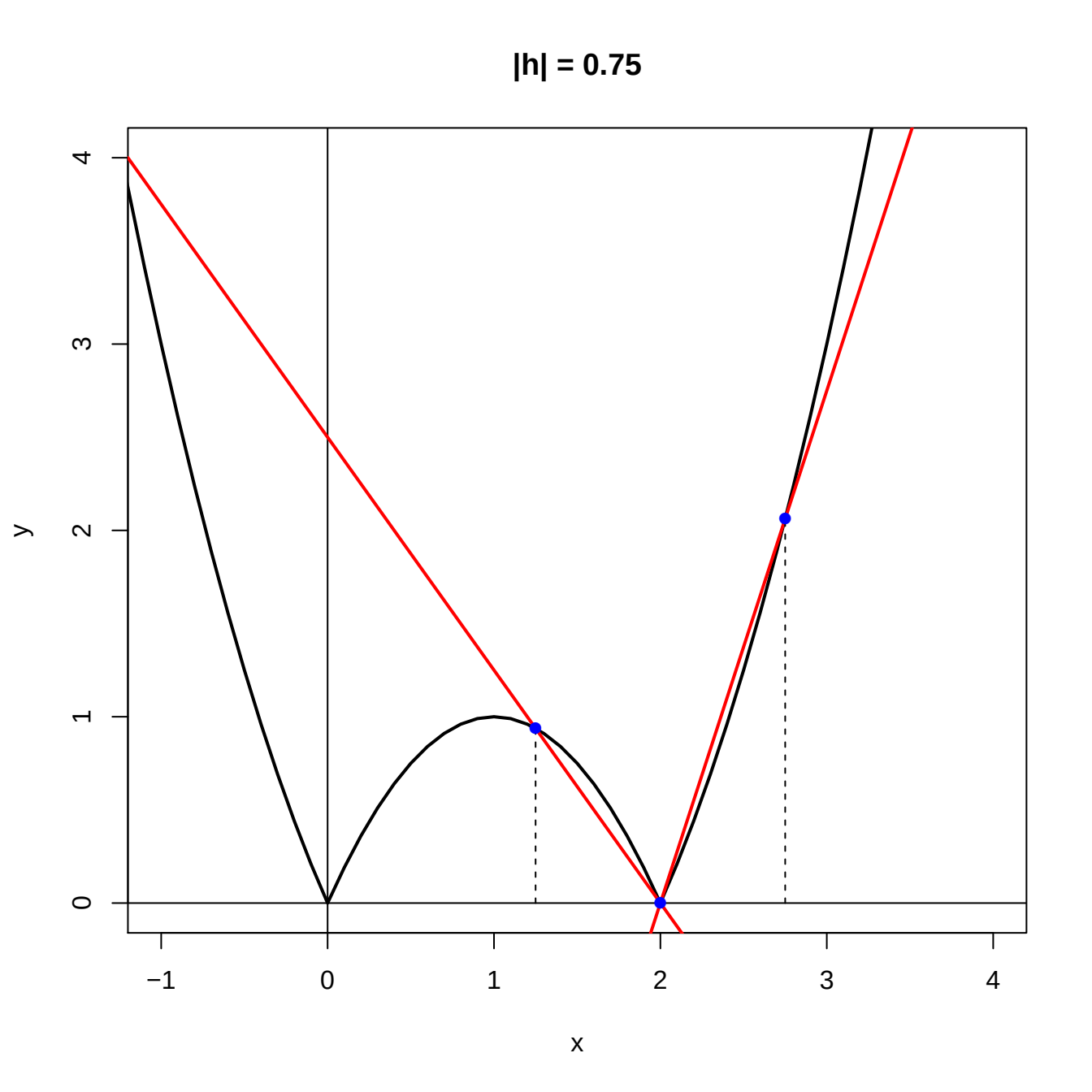
1
2
3
4
−1
0
1
2
3
4


|h| = 0.75
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x
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1
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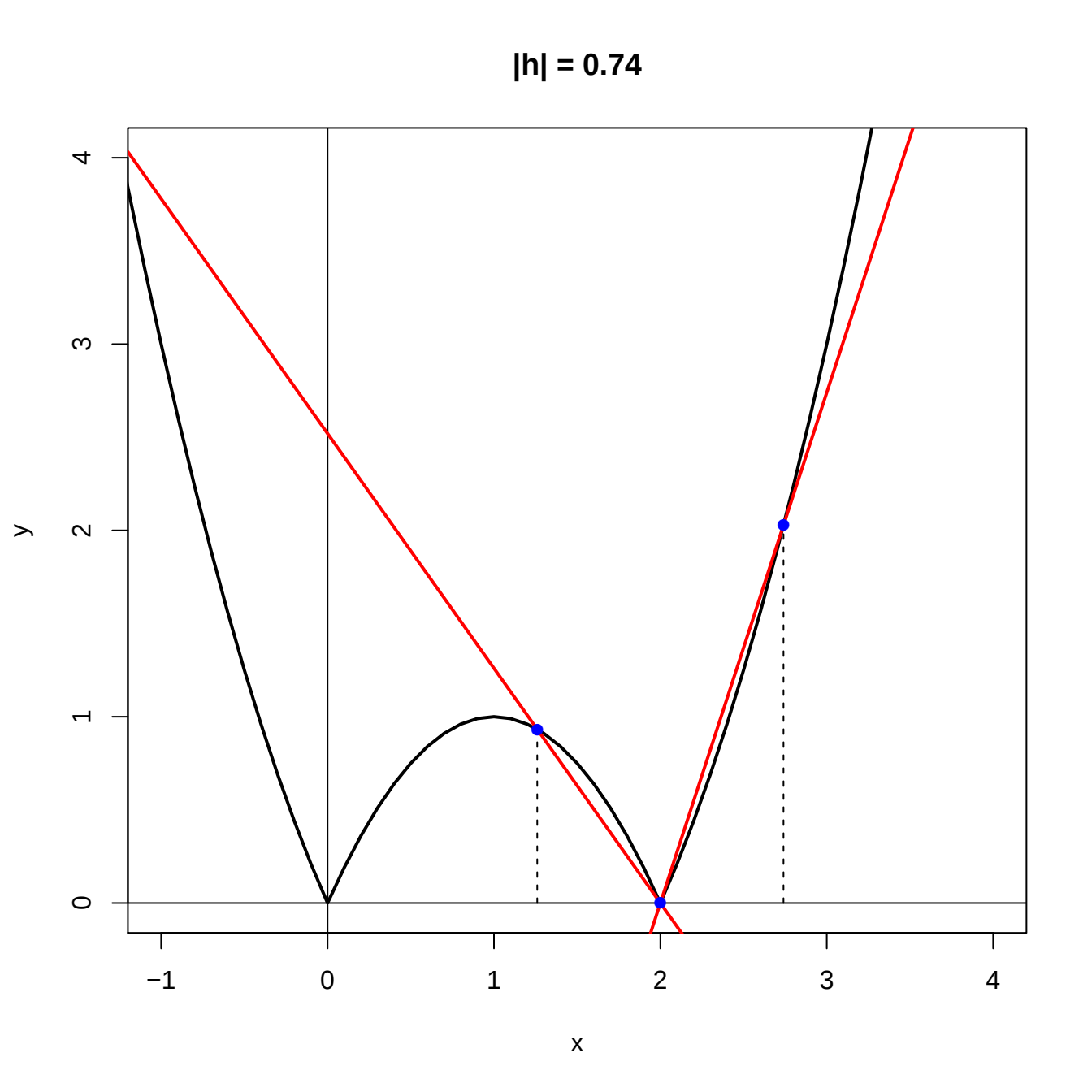
3
4
−1
0
1
2
3
4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x
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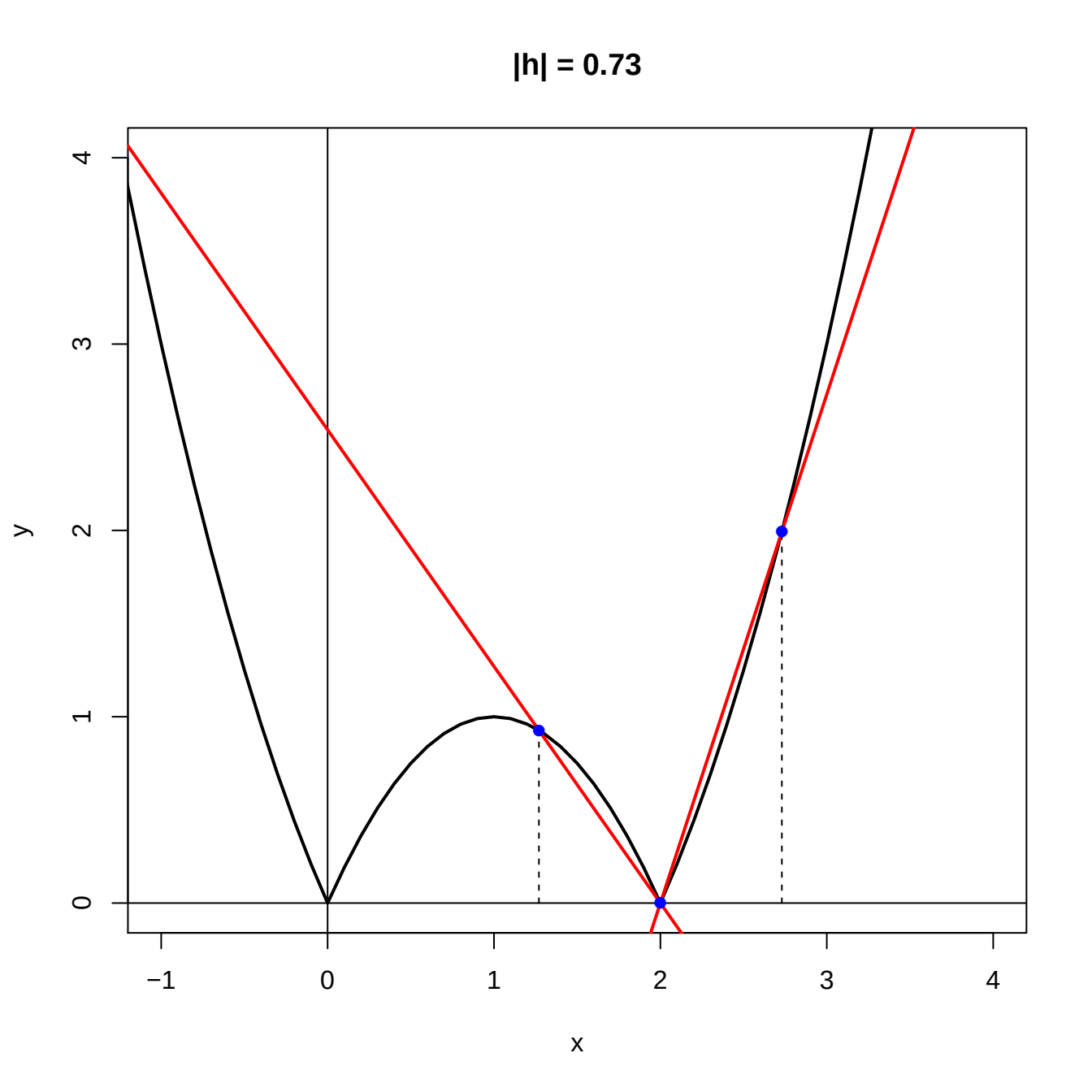
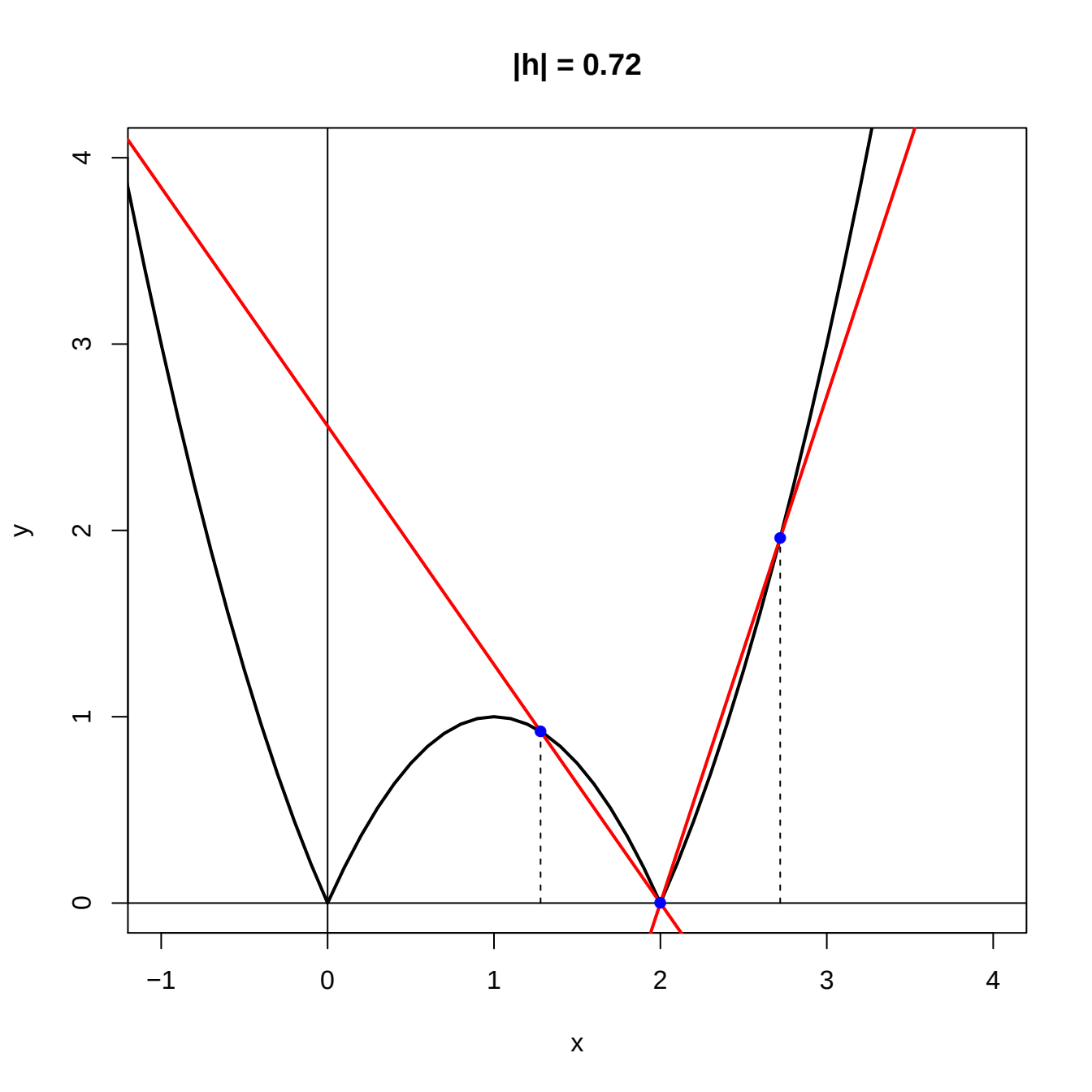
2
3
4
−1
0
1
2
3
4


|h| = 0.73
y
x
0
1
2
3
4
−1
0
1
2
3
4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x
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3
4
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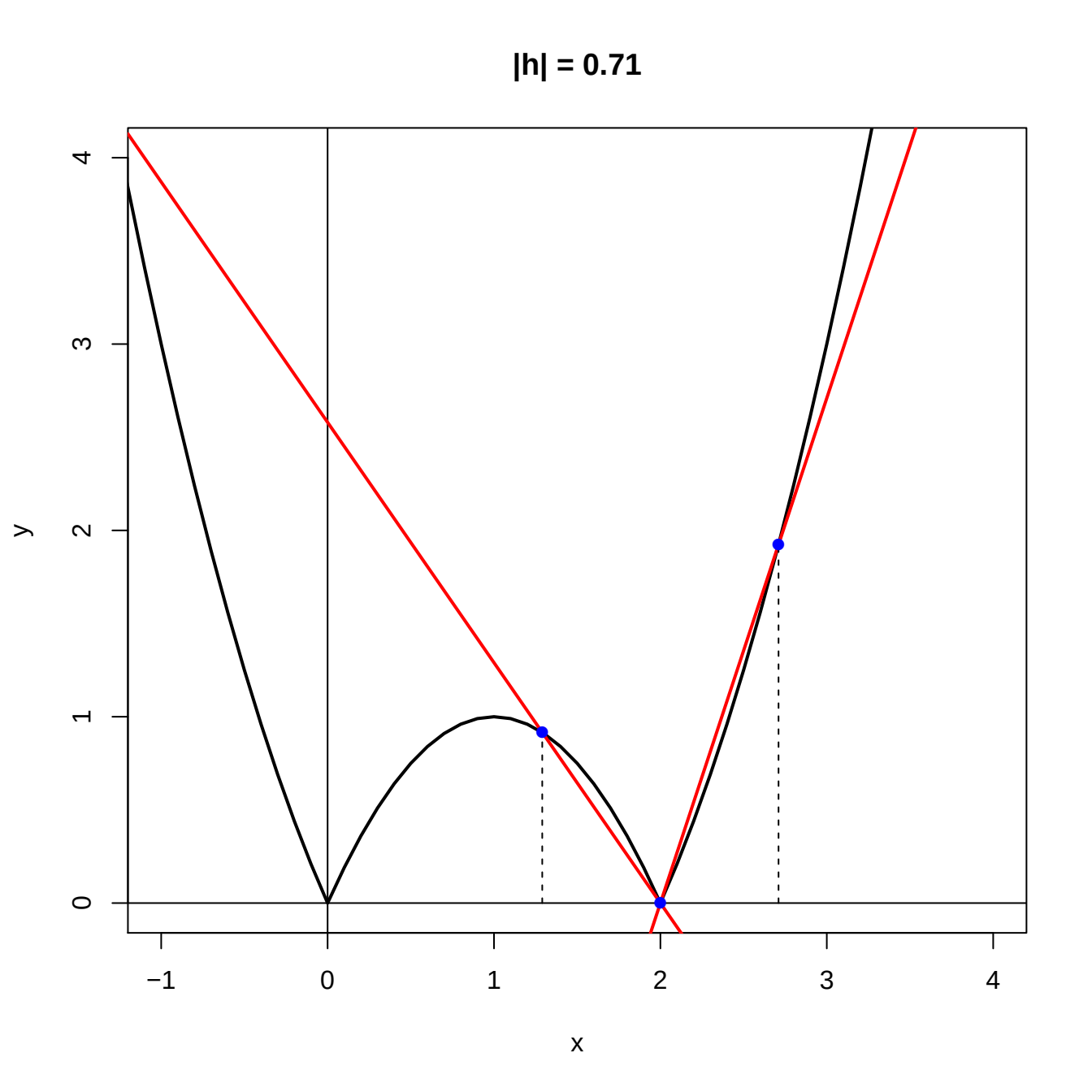
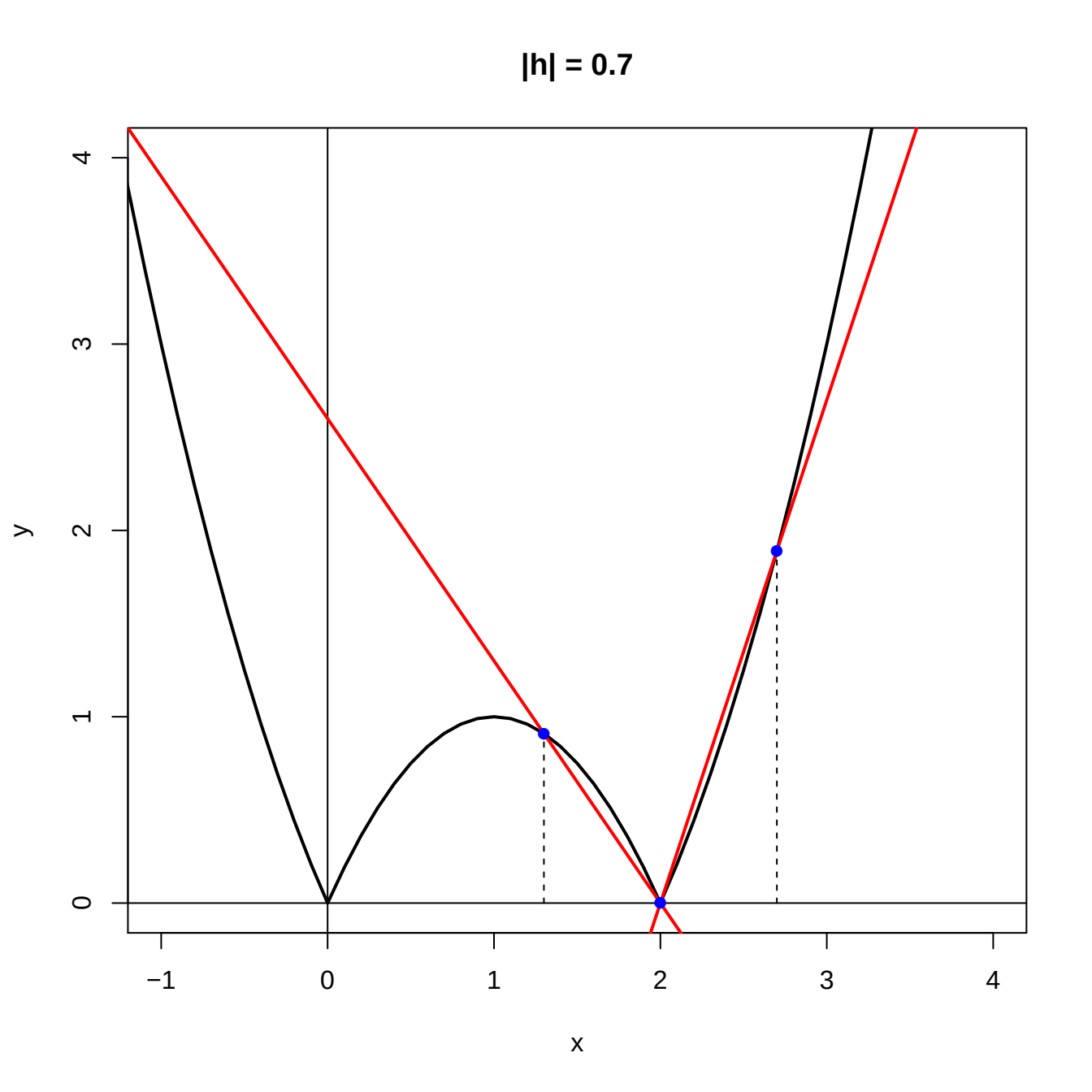
0
1
2
3
4


|h| = 0.71
y
x
0
1
2
3
4
−1
0
1
2
3
4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x
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1
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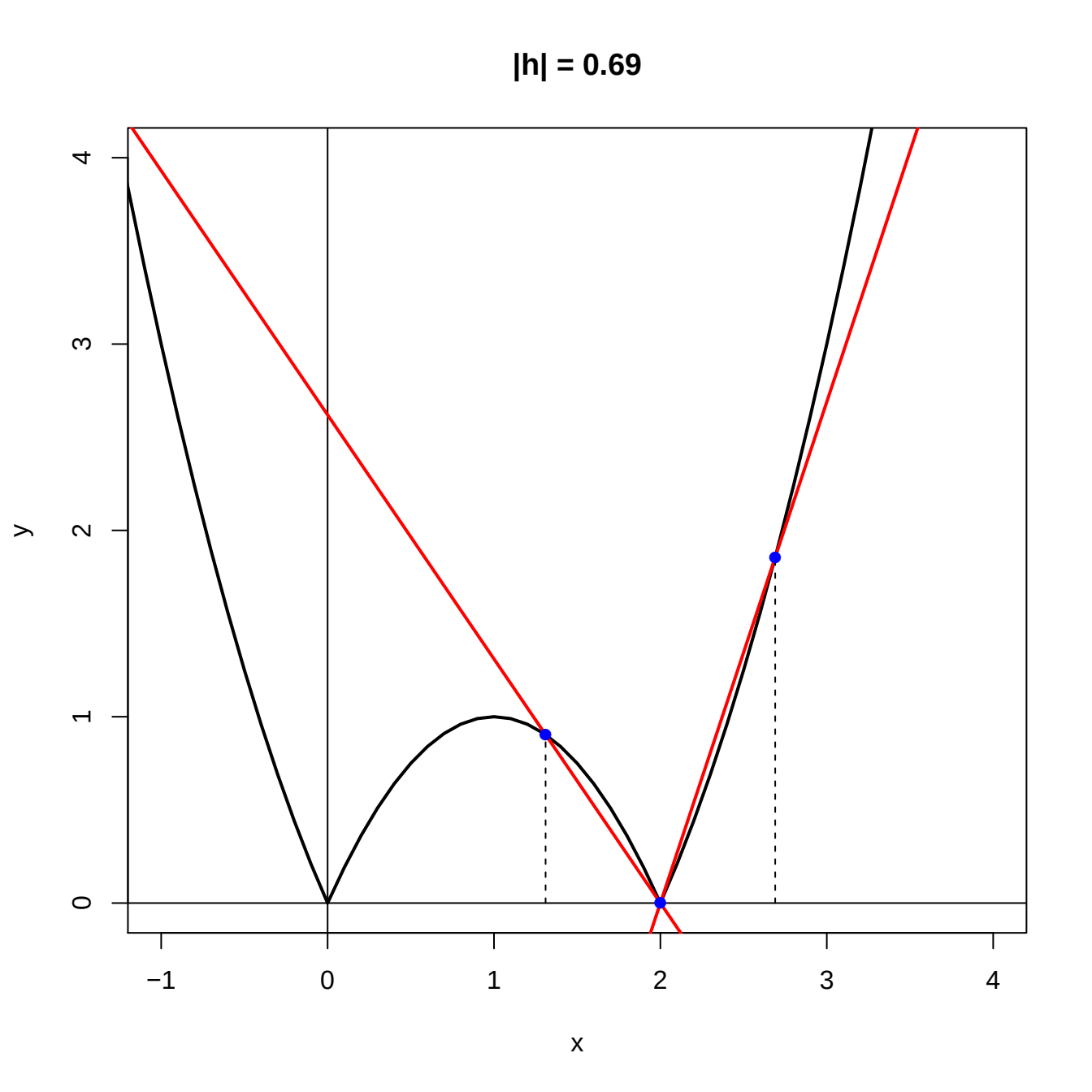
3
4
−1
0
1
2
3
4


|h| = 0.69
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x
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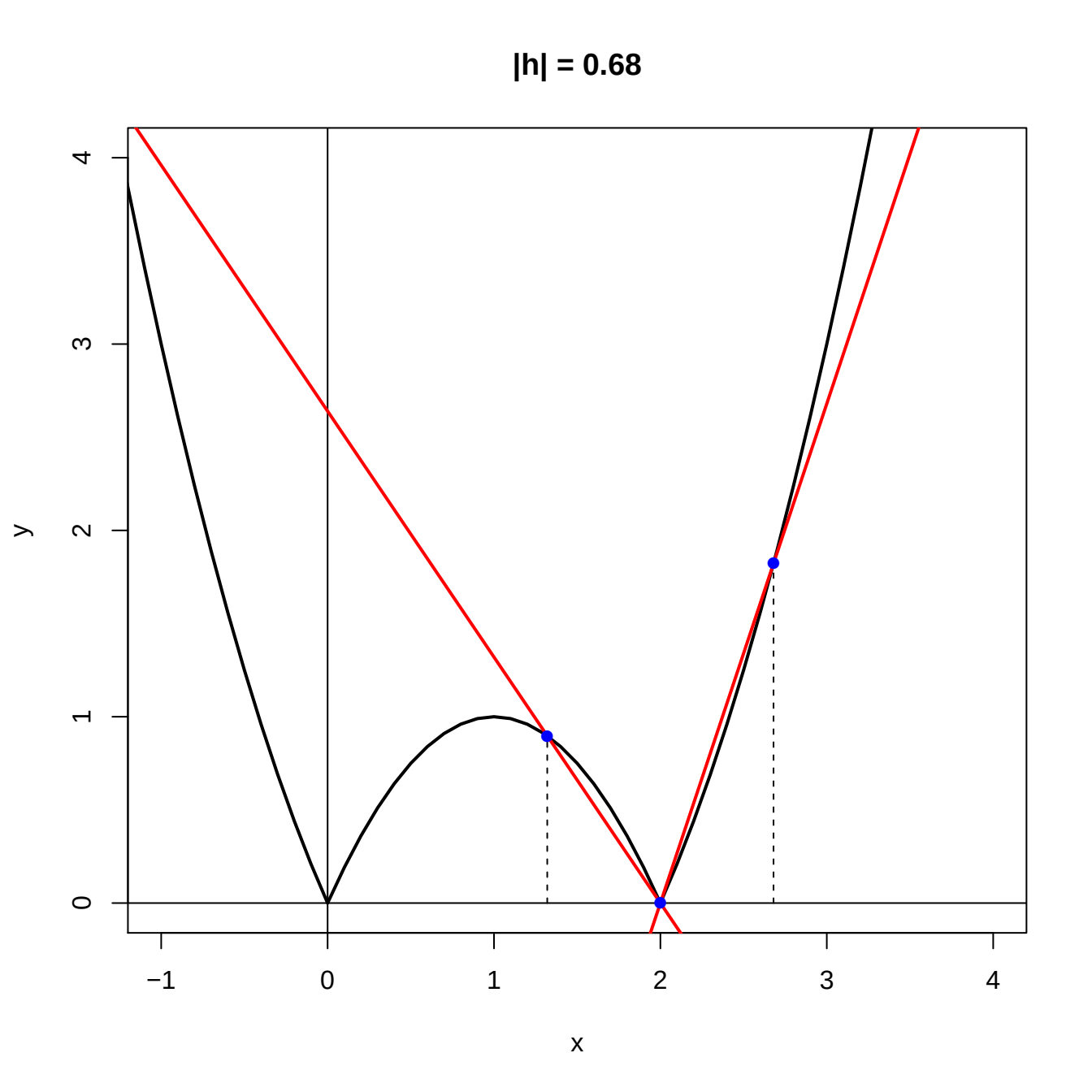
3
4
−1
0
1
2
3
4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x
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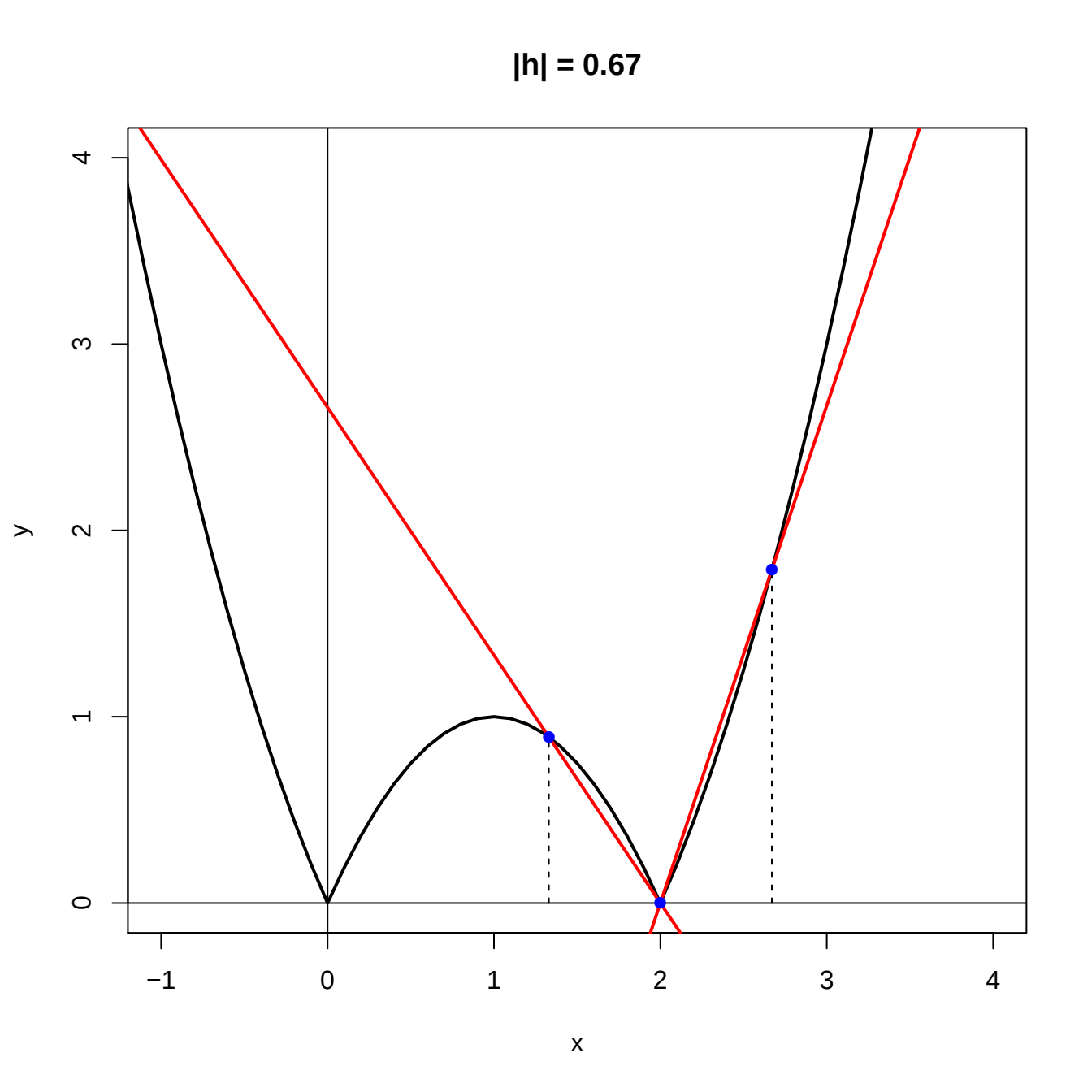
1
2
3
4
−1
0
1
2
3
4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x
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2
3
4
−1
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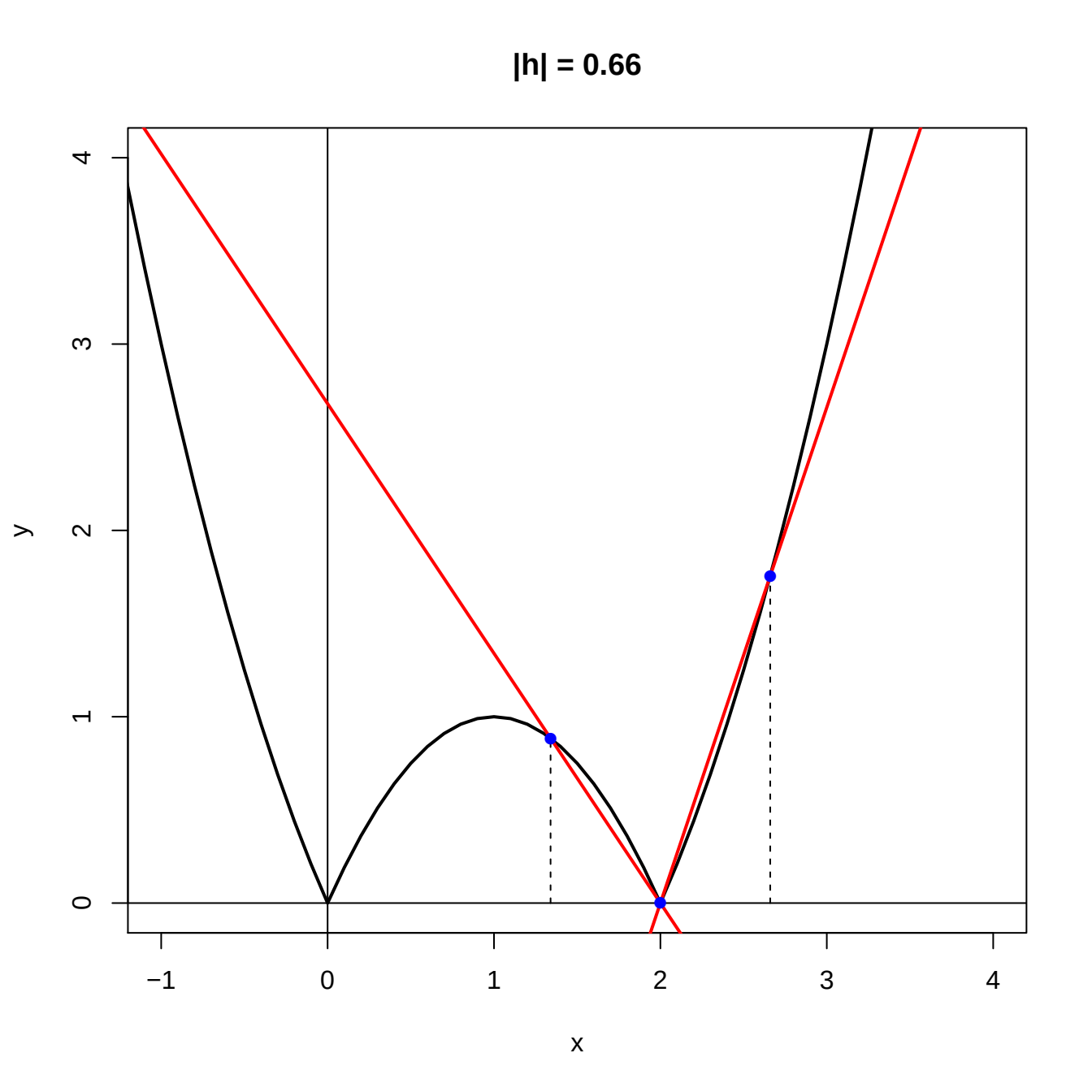
1
2
3
4


|h| = 0.66
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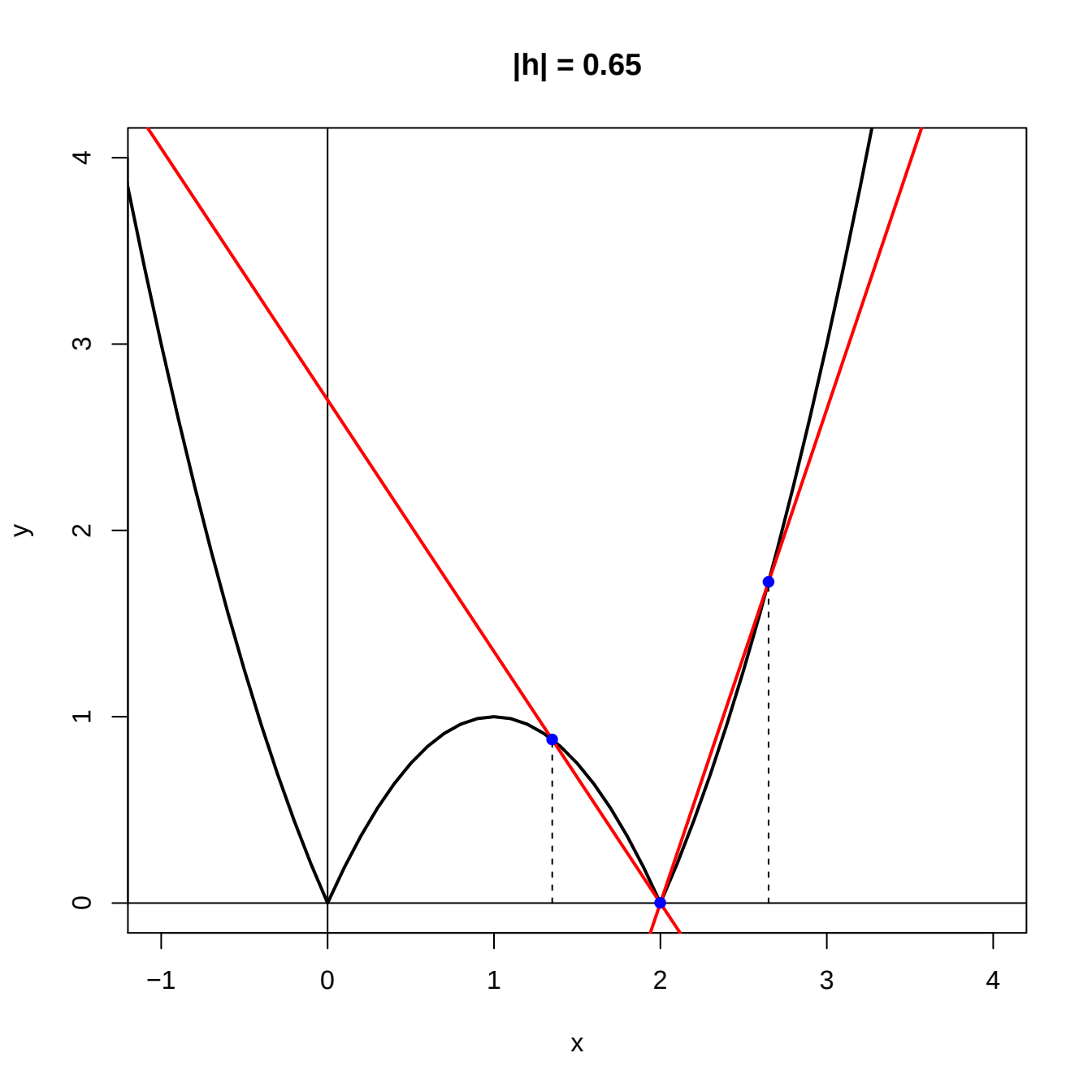
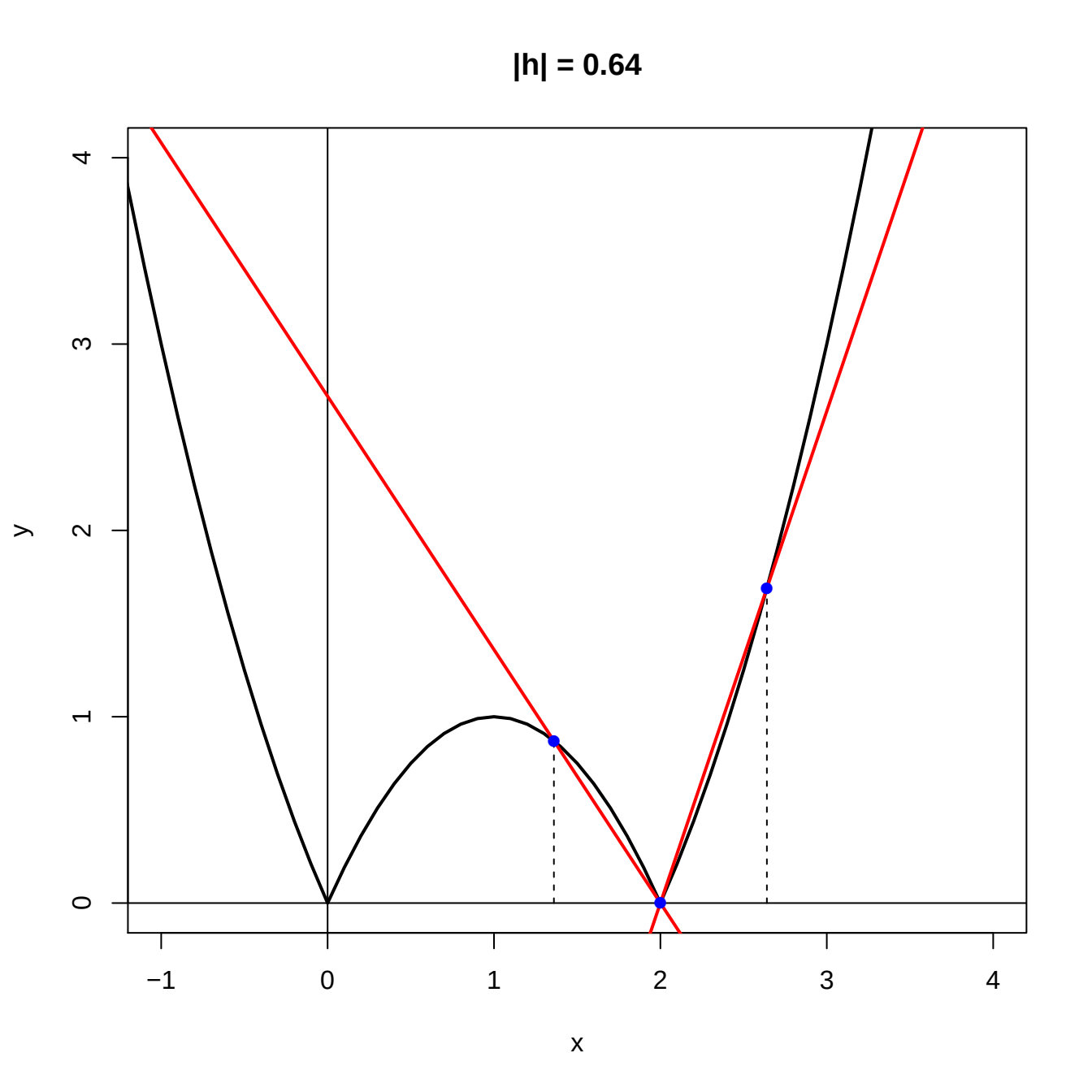
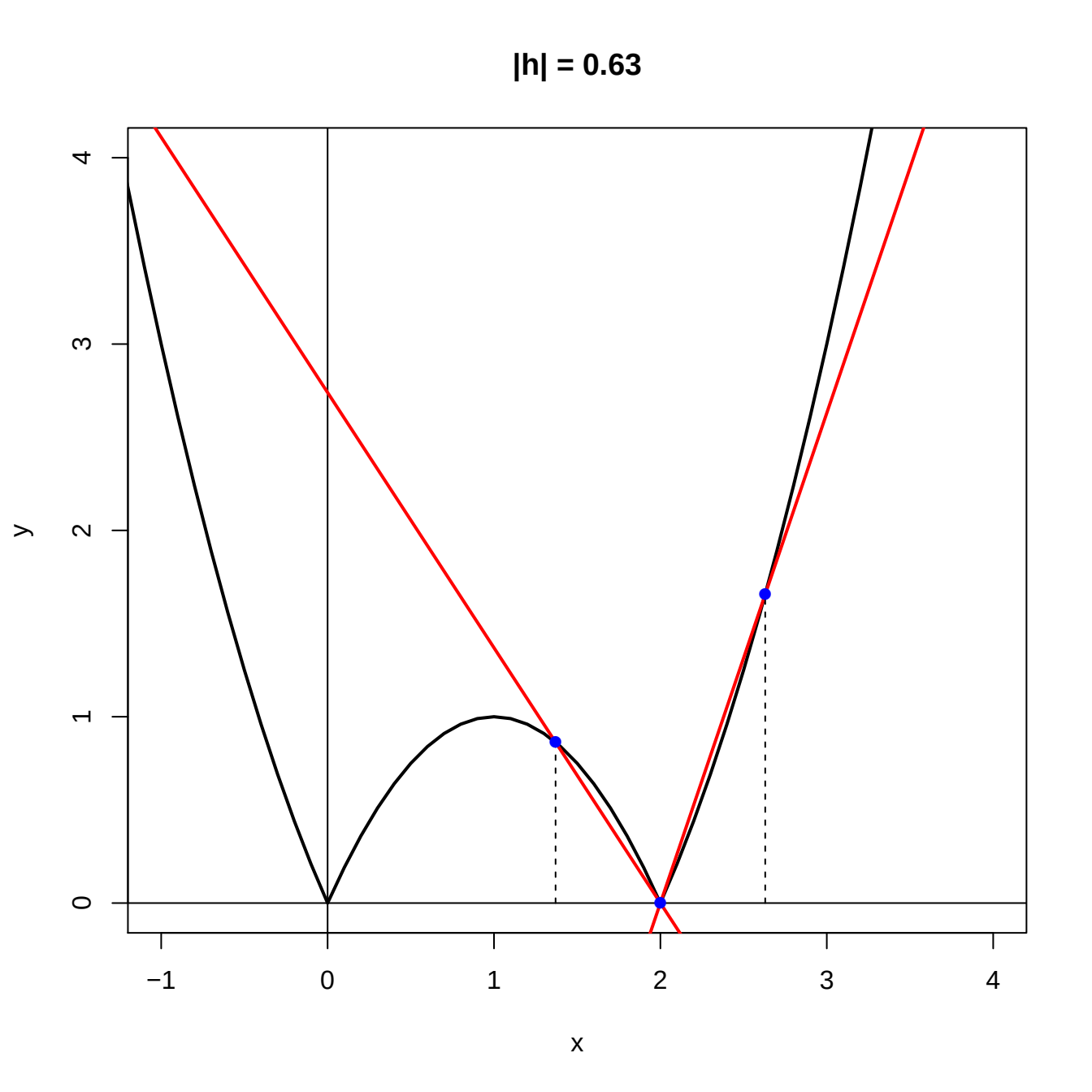
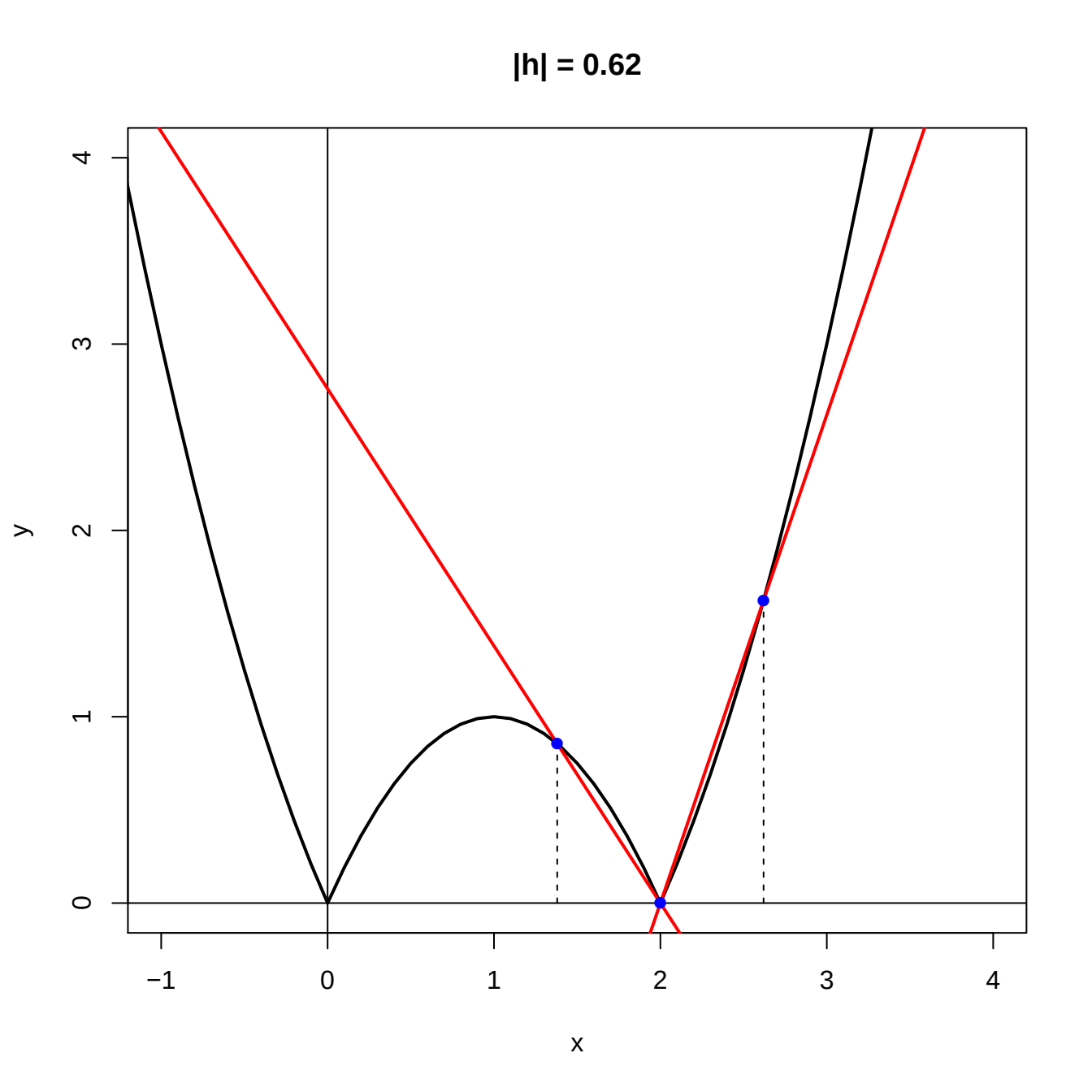
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.65
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.64
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.63
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.62
y
x
0
1
2
3
4
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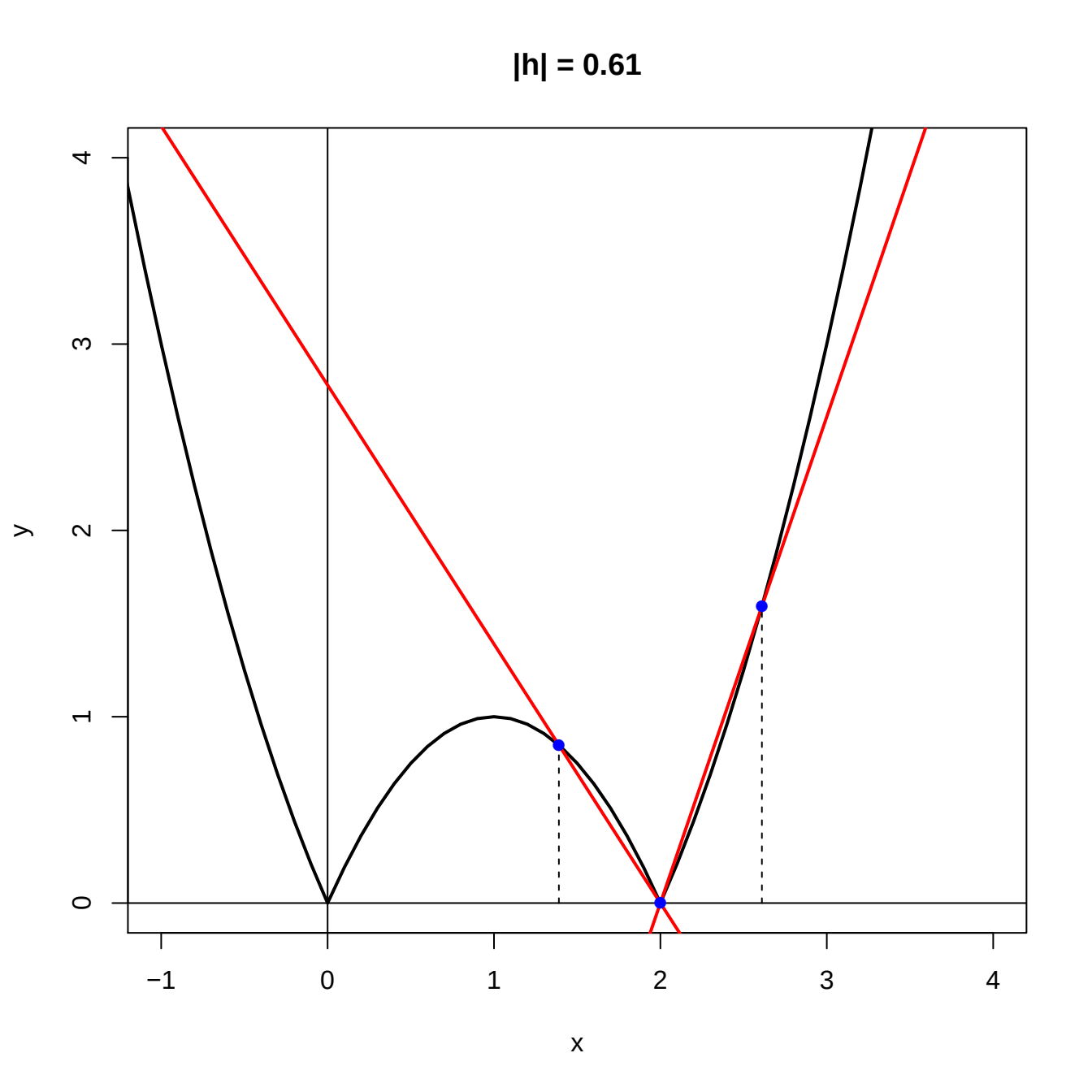
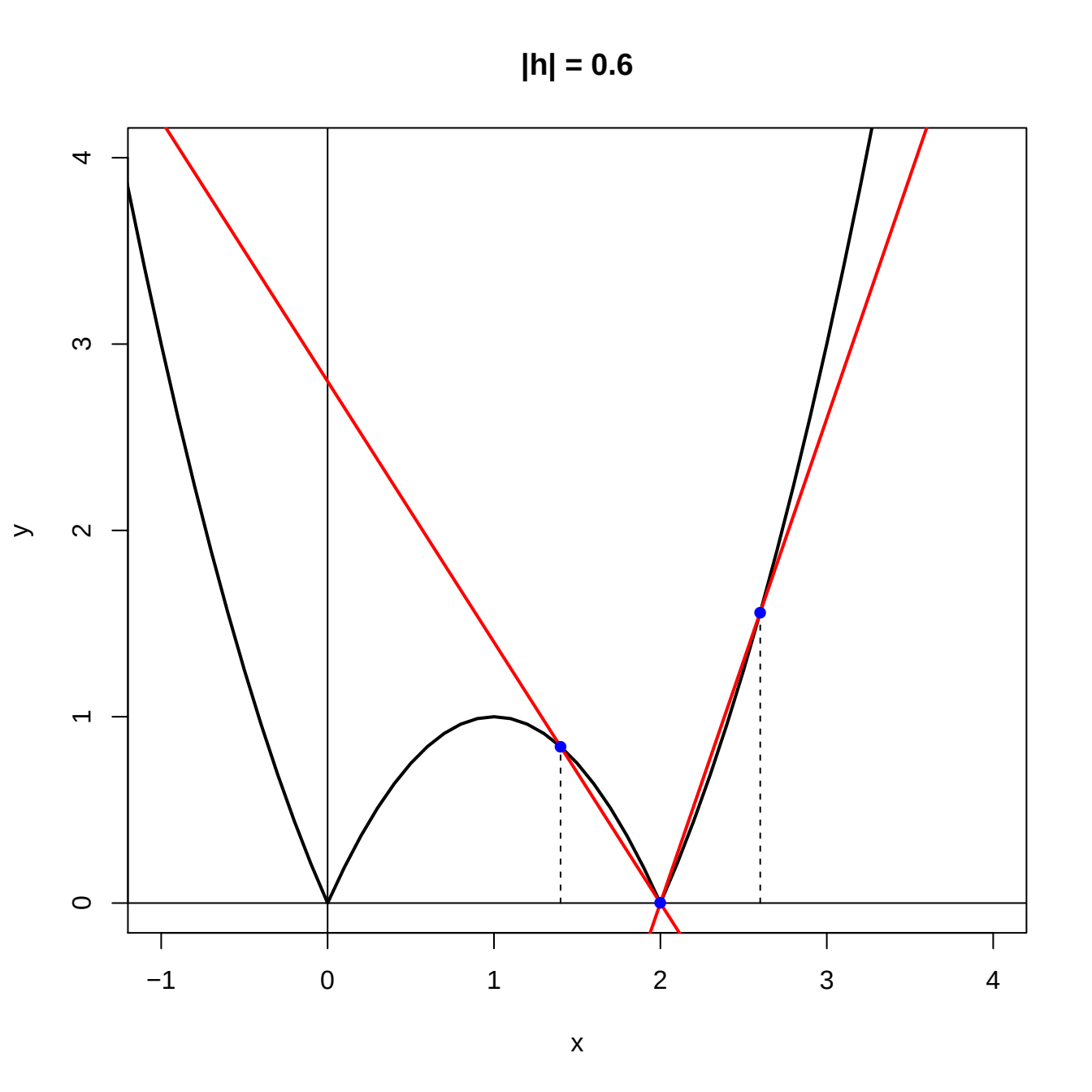
0
1
2
3
4


|h| = 0.61
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.6
y
x
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1
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3
4
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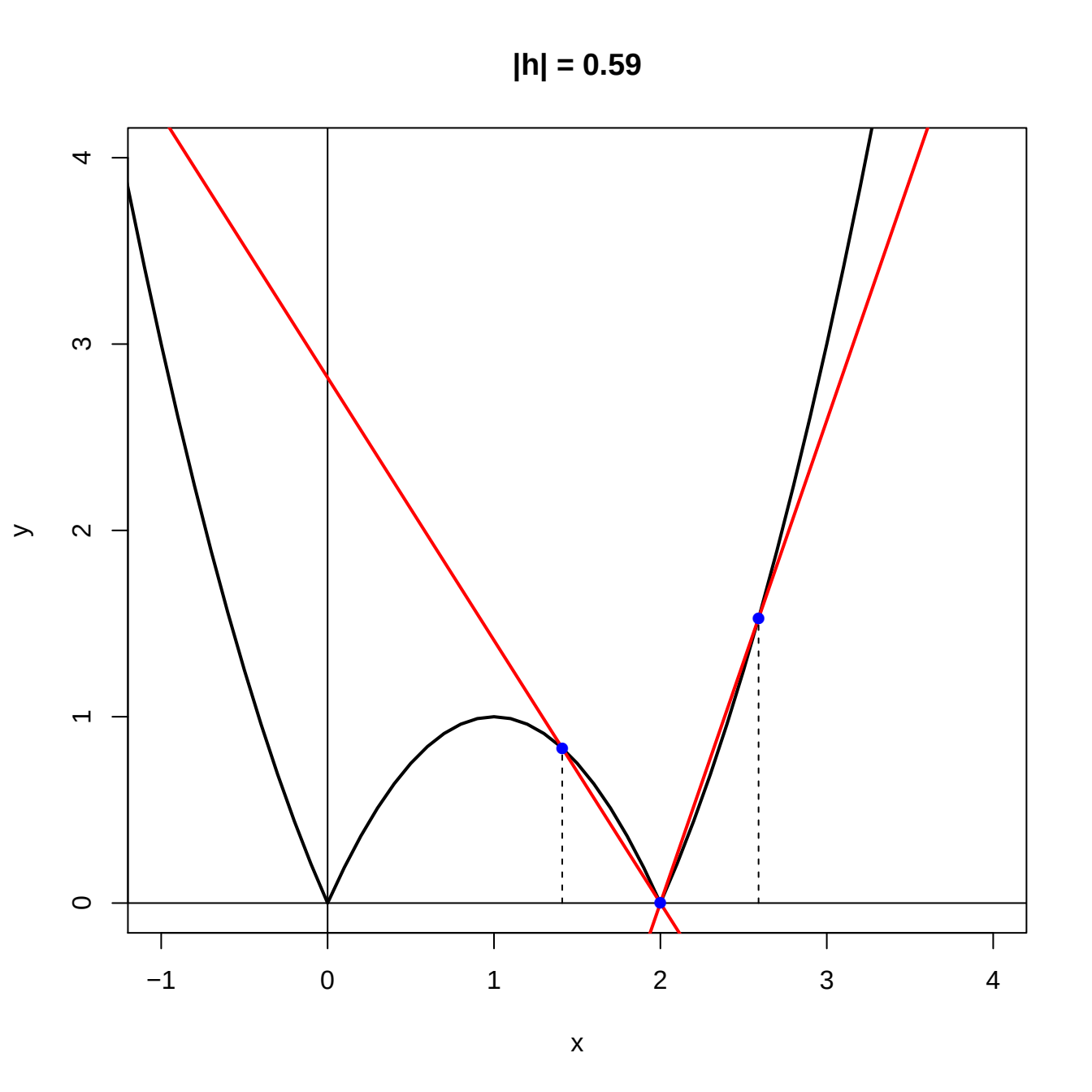
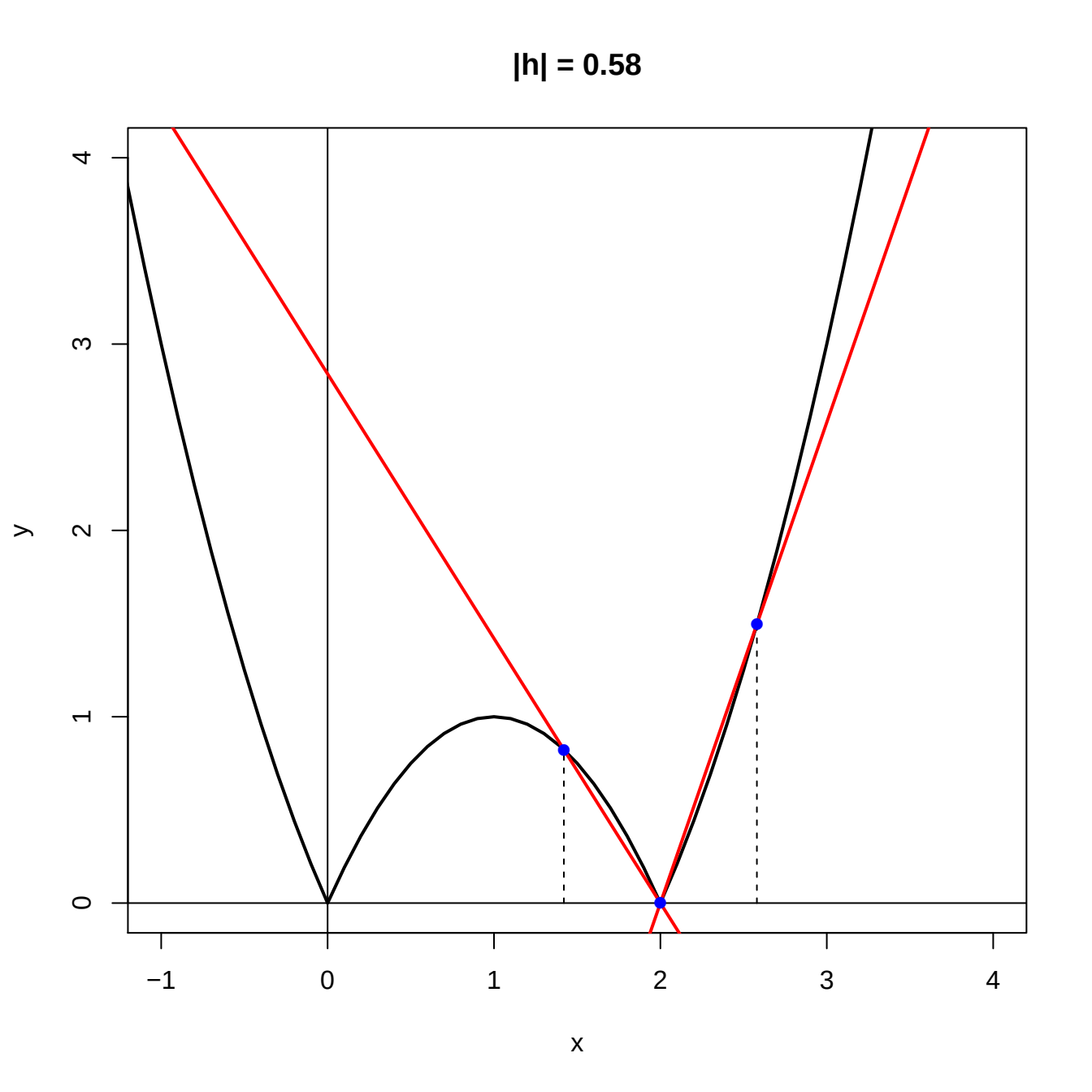
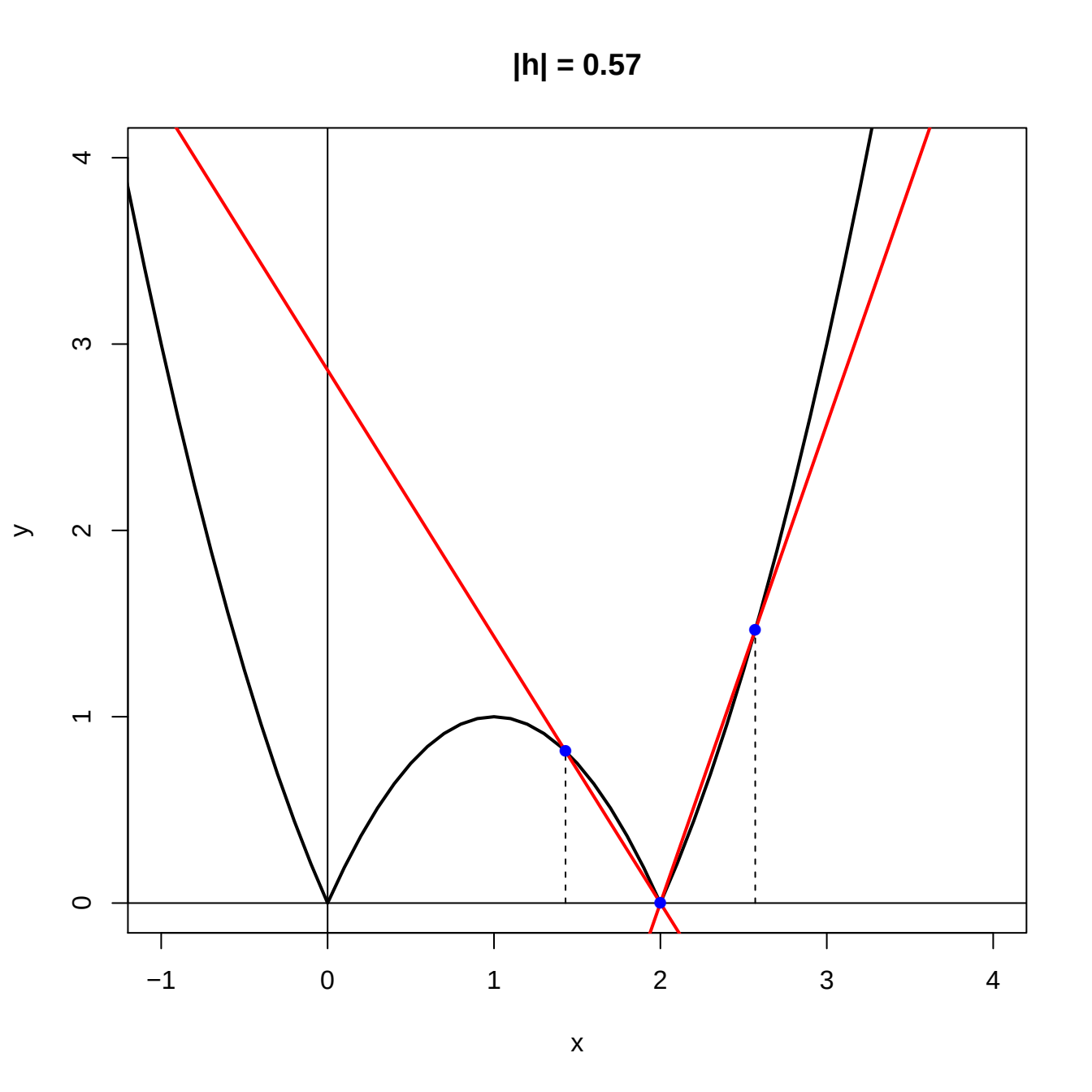
0
1
2
3
4


|h| = 0.59
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.58
y
x
0
1
2
3
4
−1
0
1
2
3
4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x
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2
3
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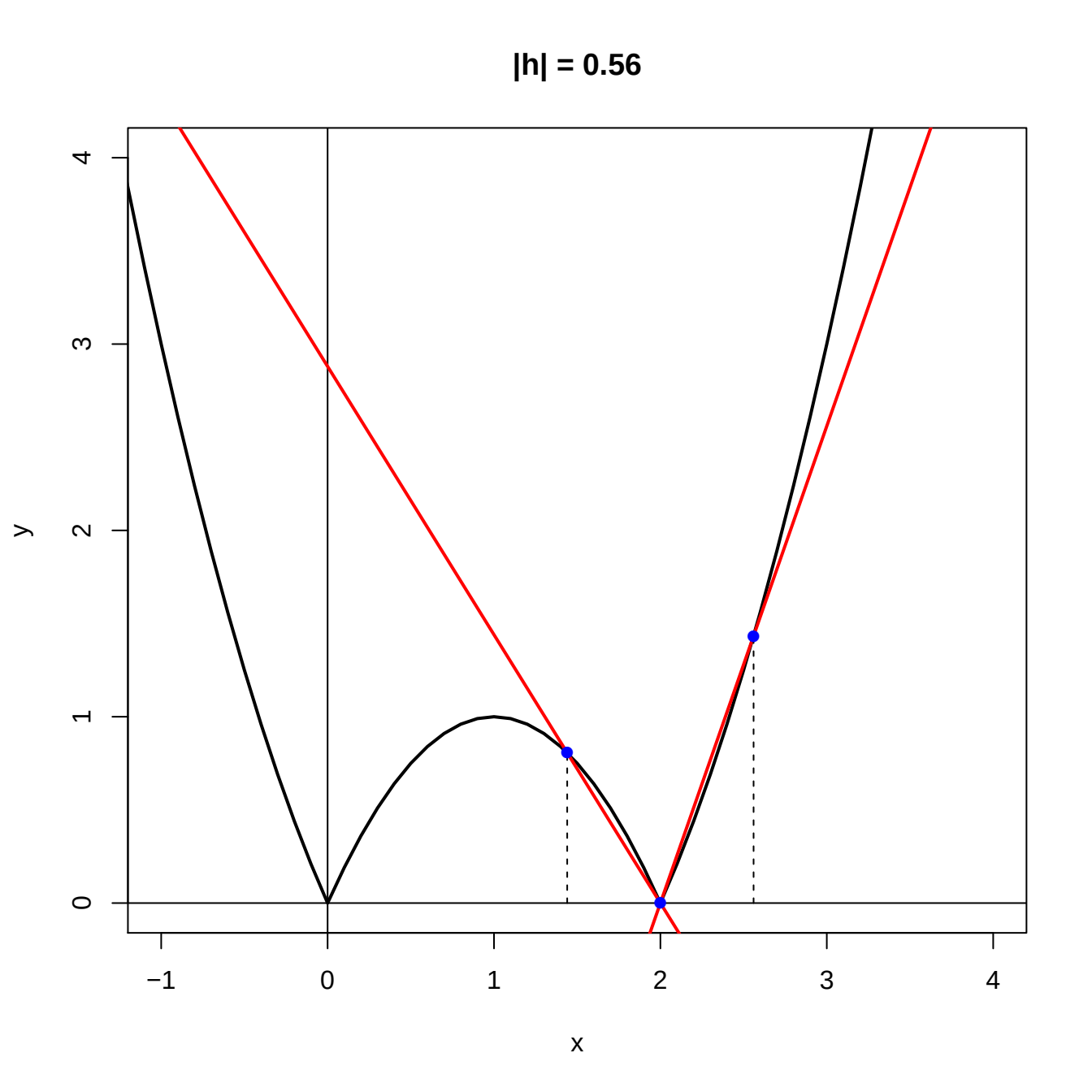
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x
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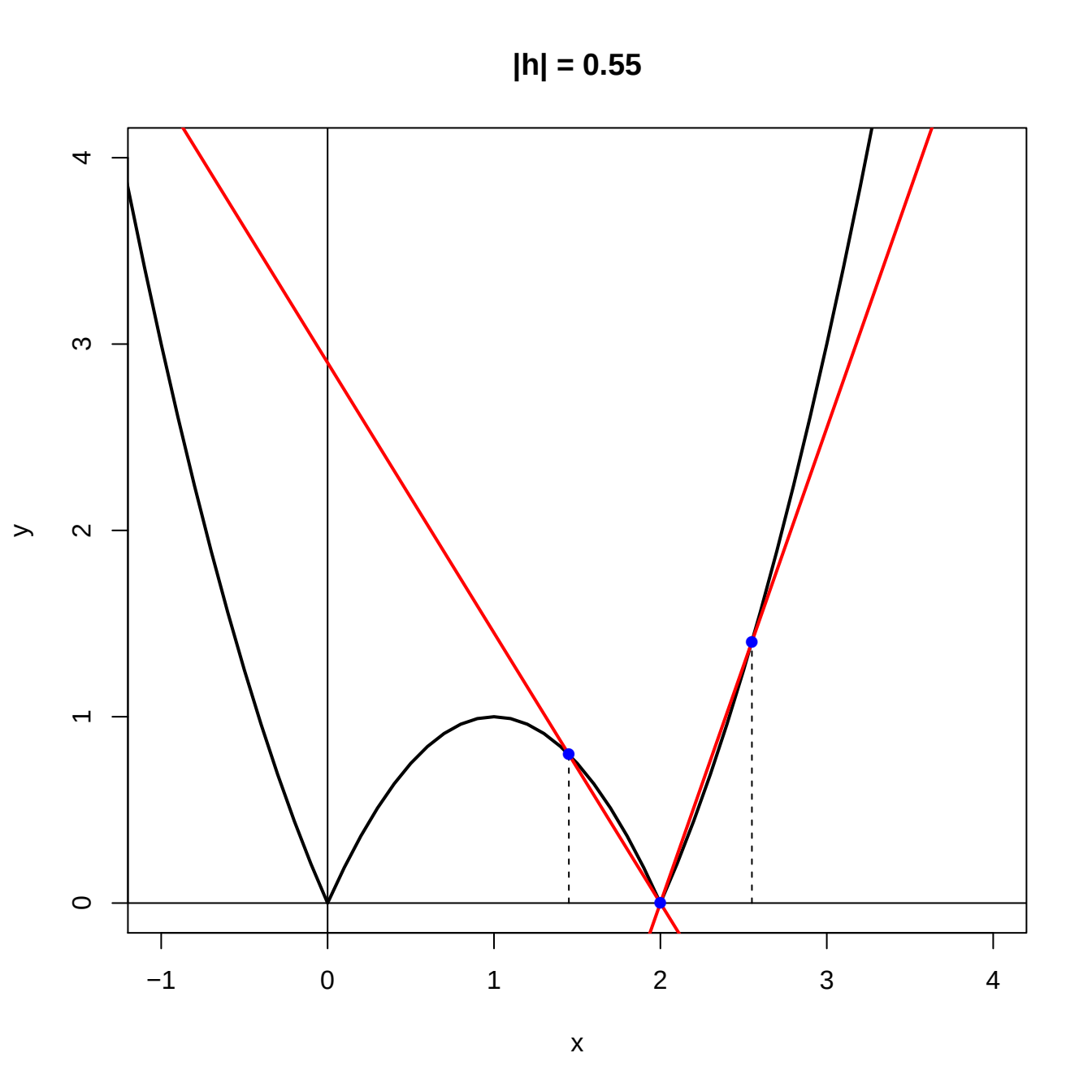
1
2
3
4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x
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4
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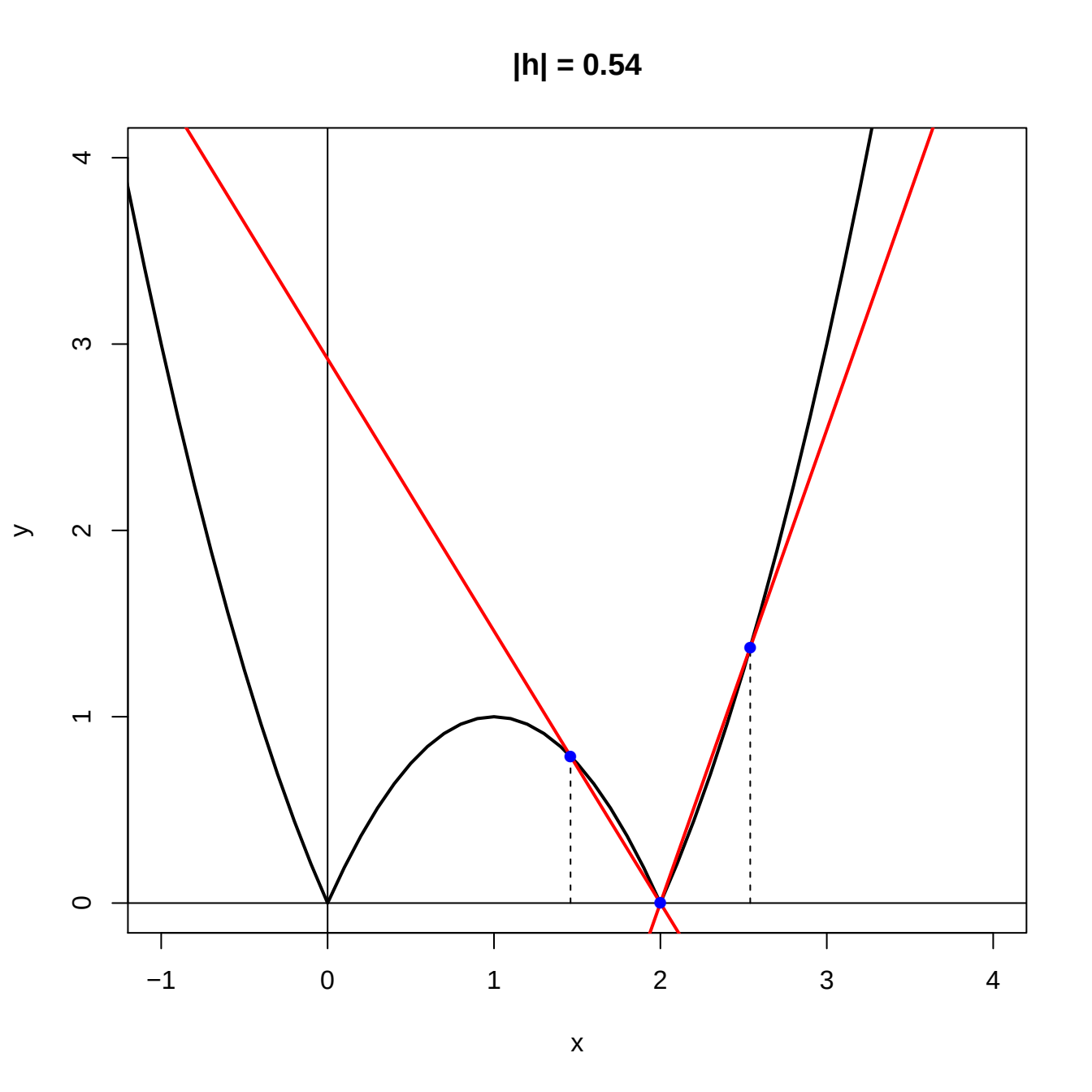
1
2
3
4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x
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4
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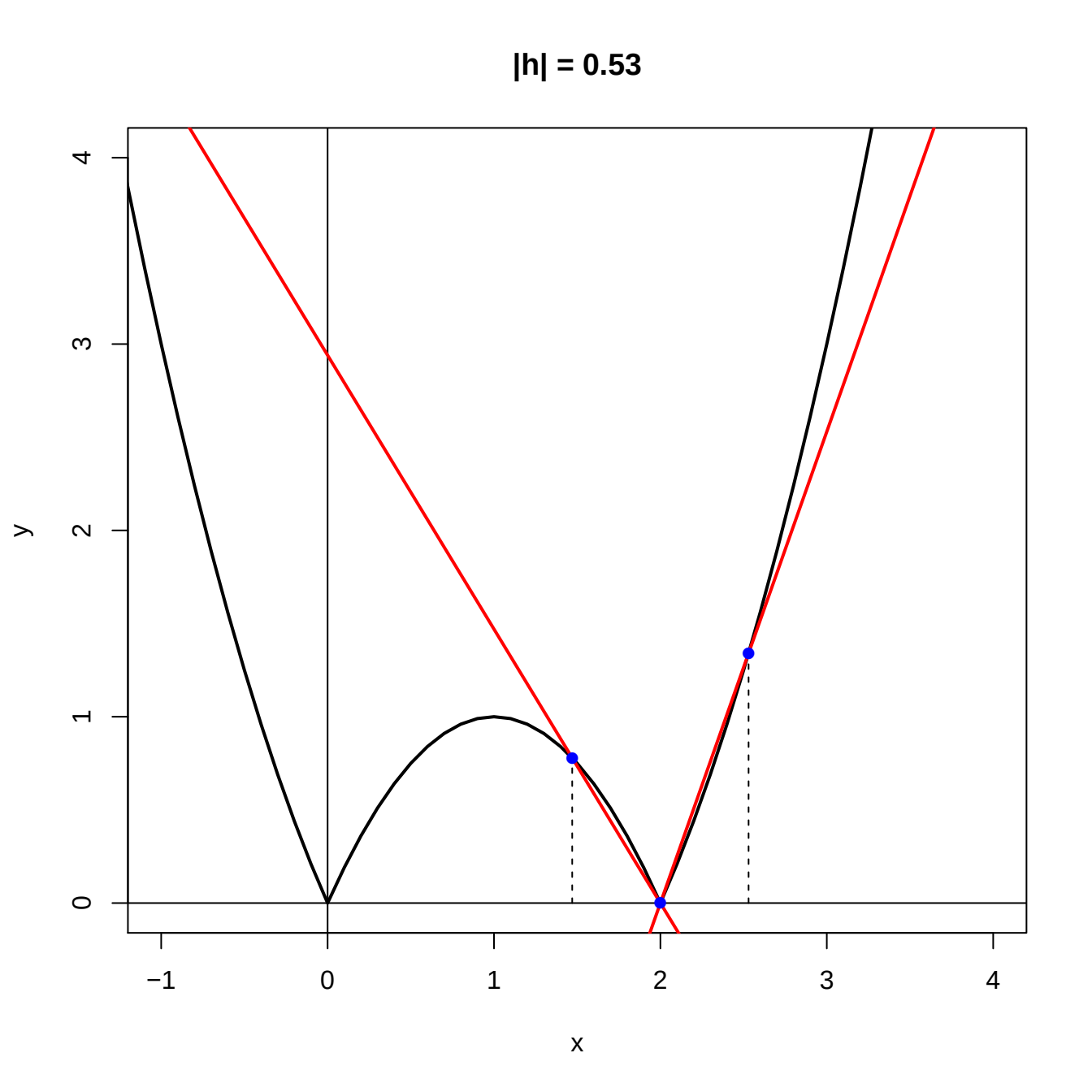
0
1
2
3
4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x
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3
4
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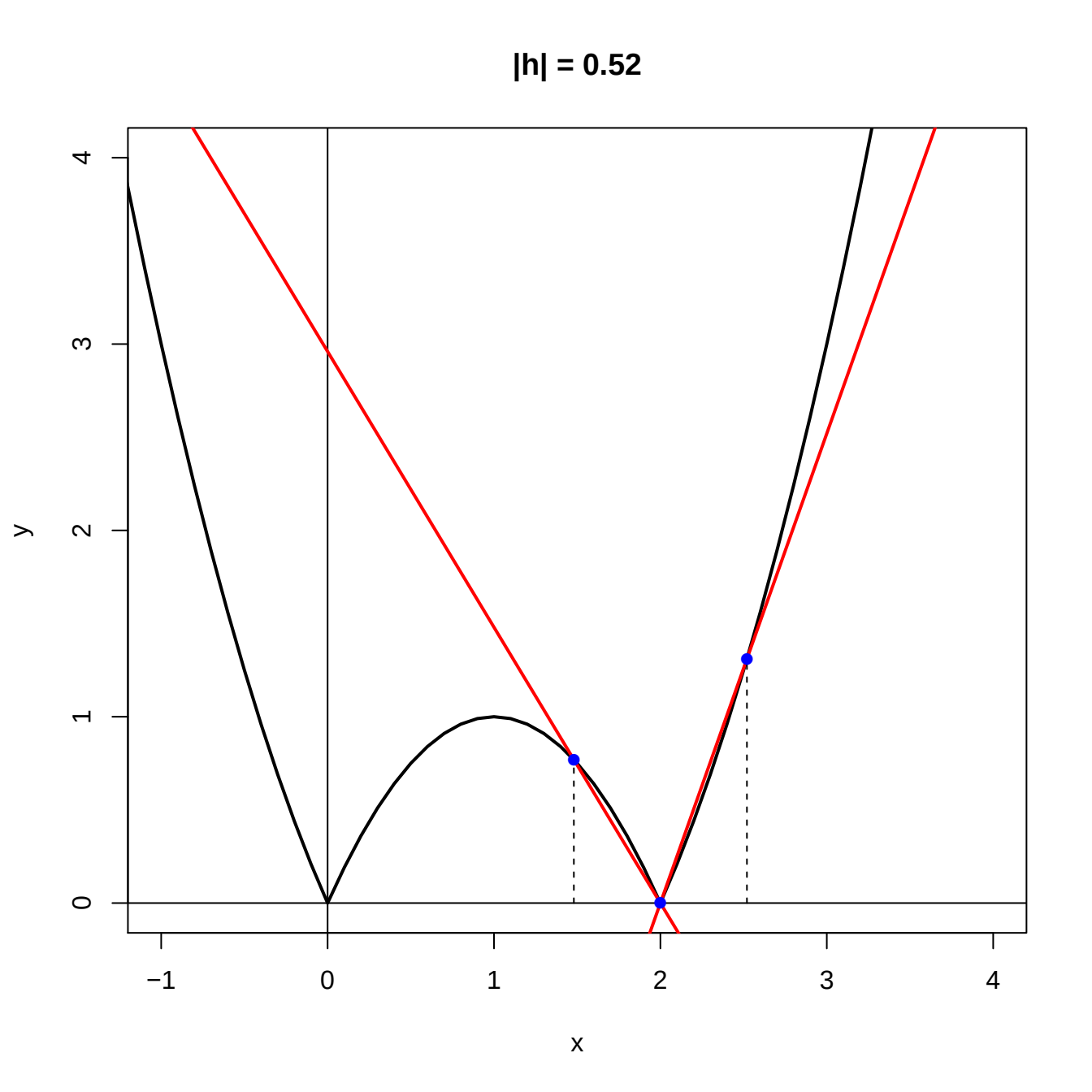
1
2
3
4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x
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4
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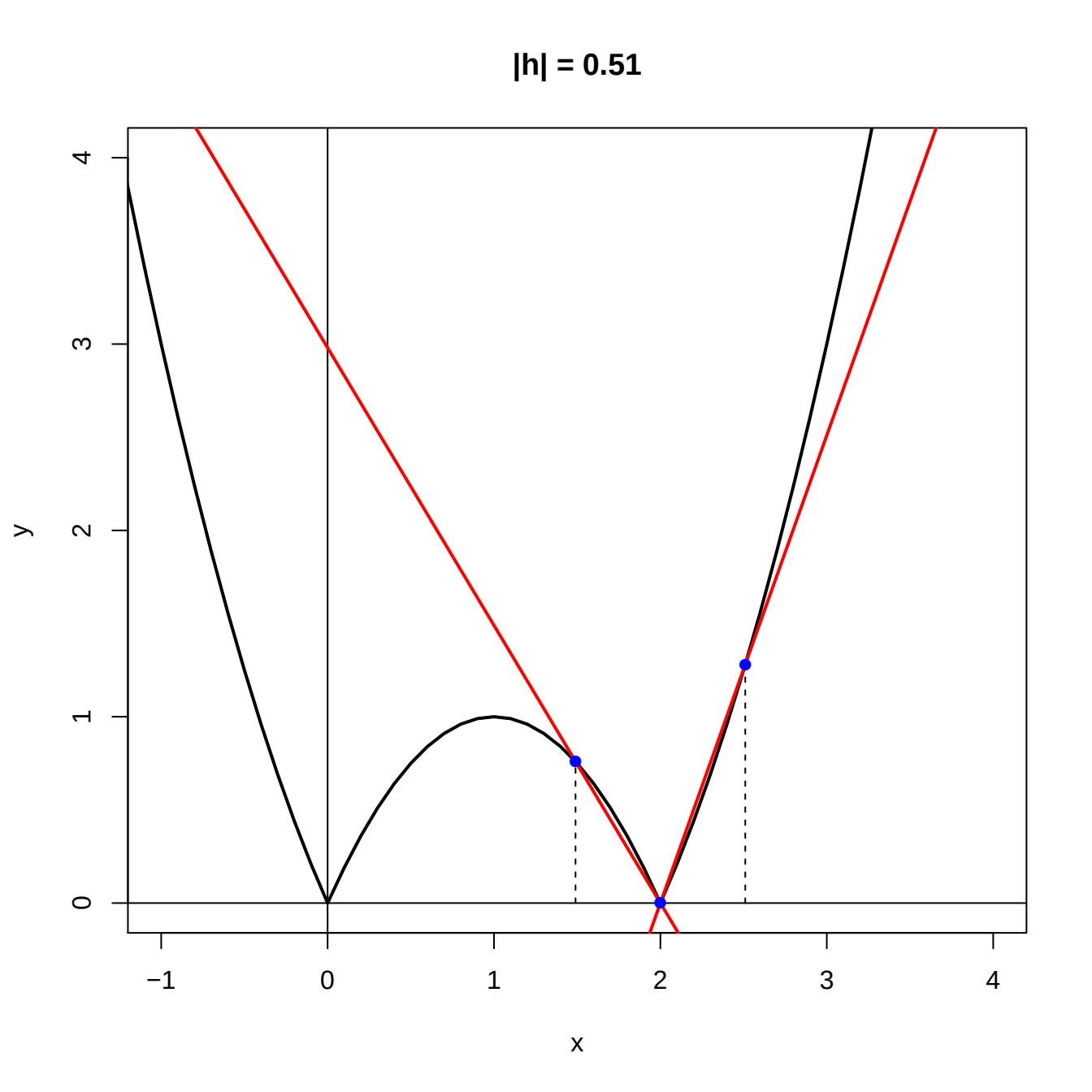
1
2
3
4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x
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1
2
3
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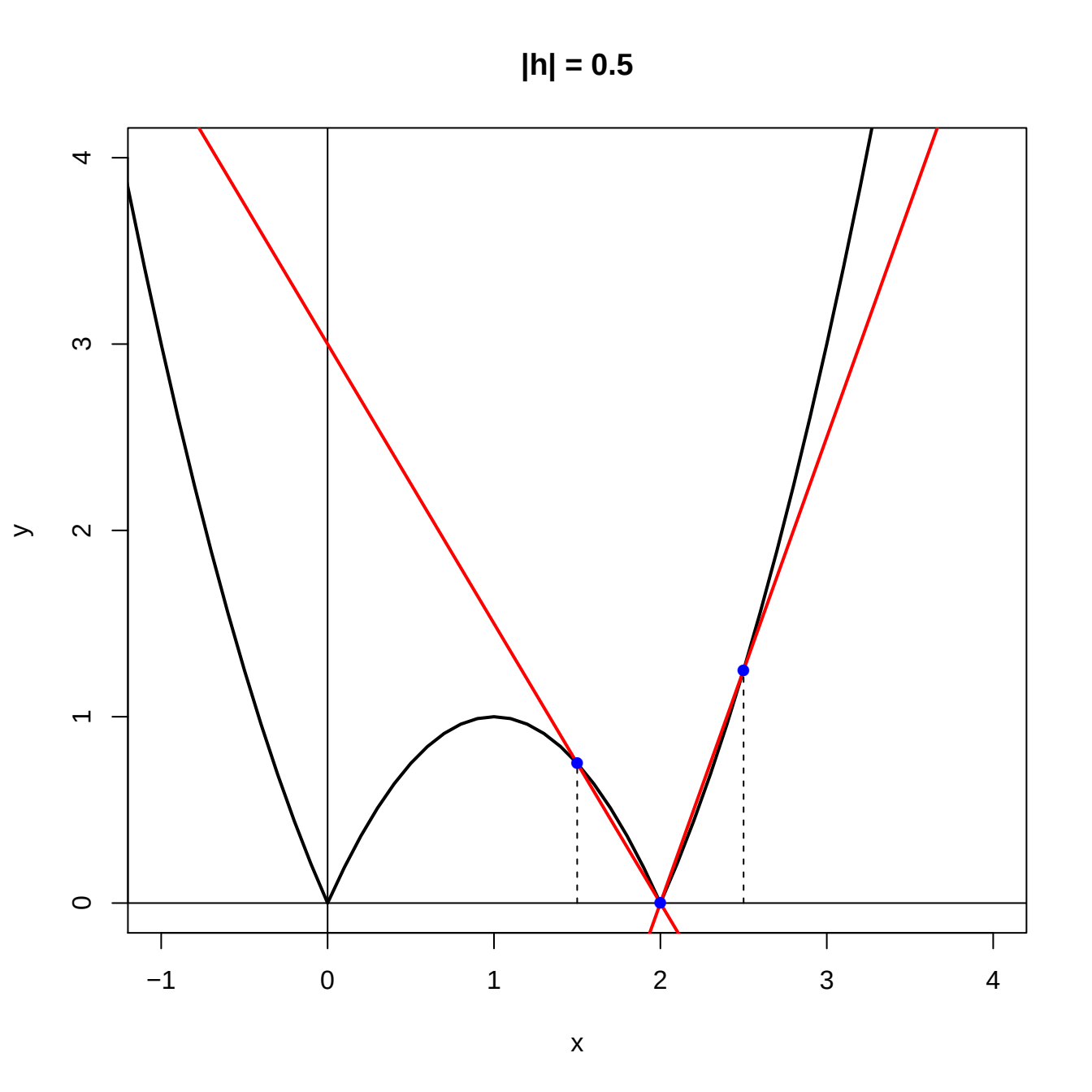
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x
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1
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3
4
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0
1
2
3
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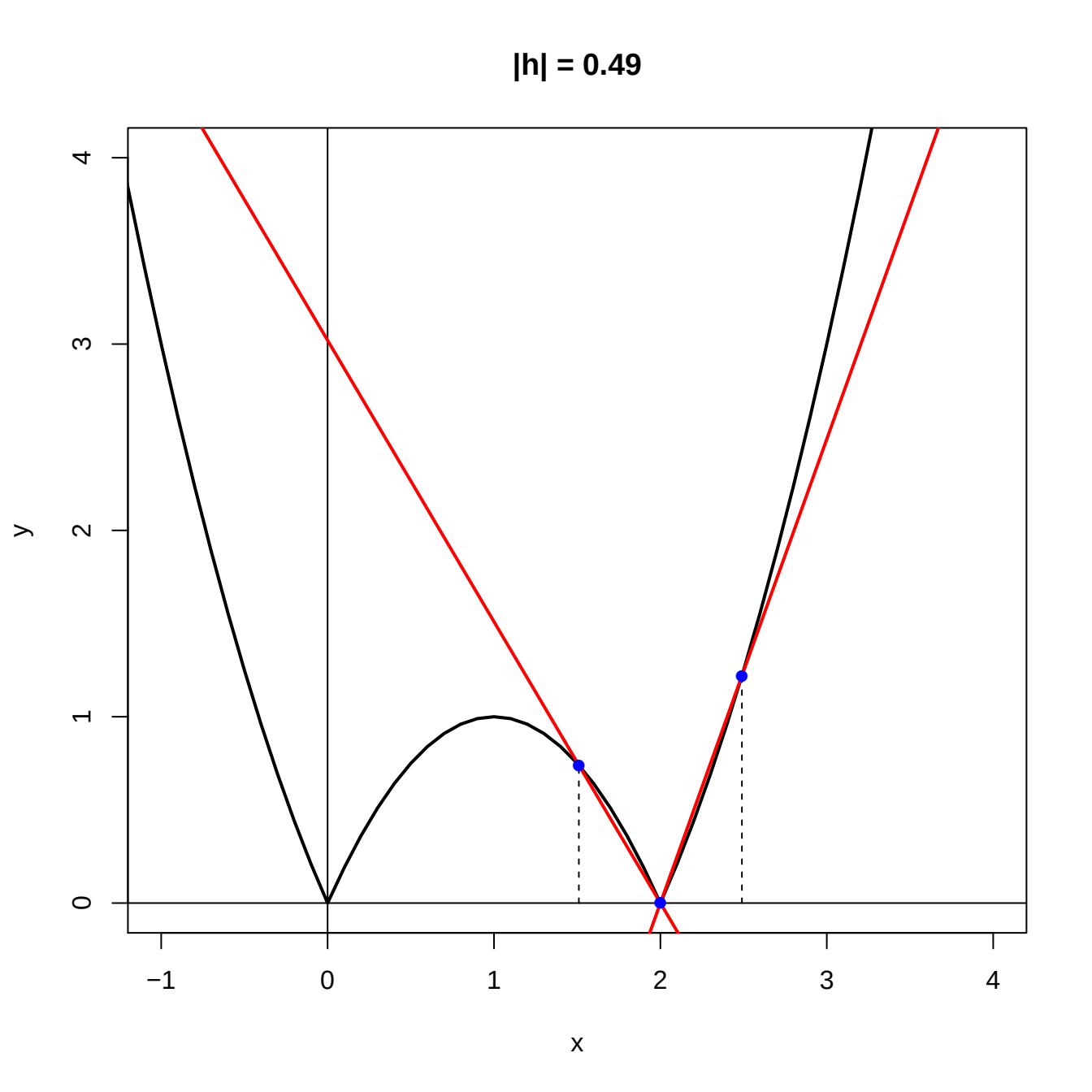
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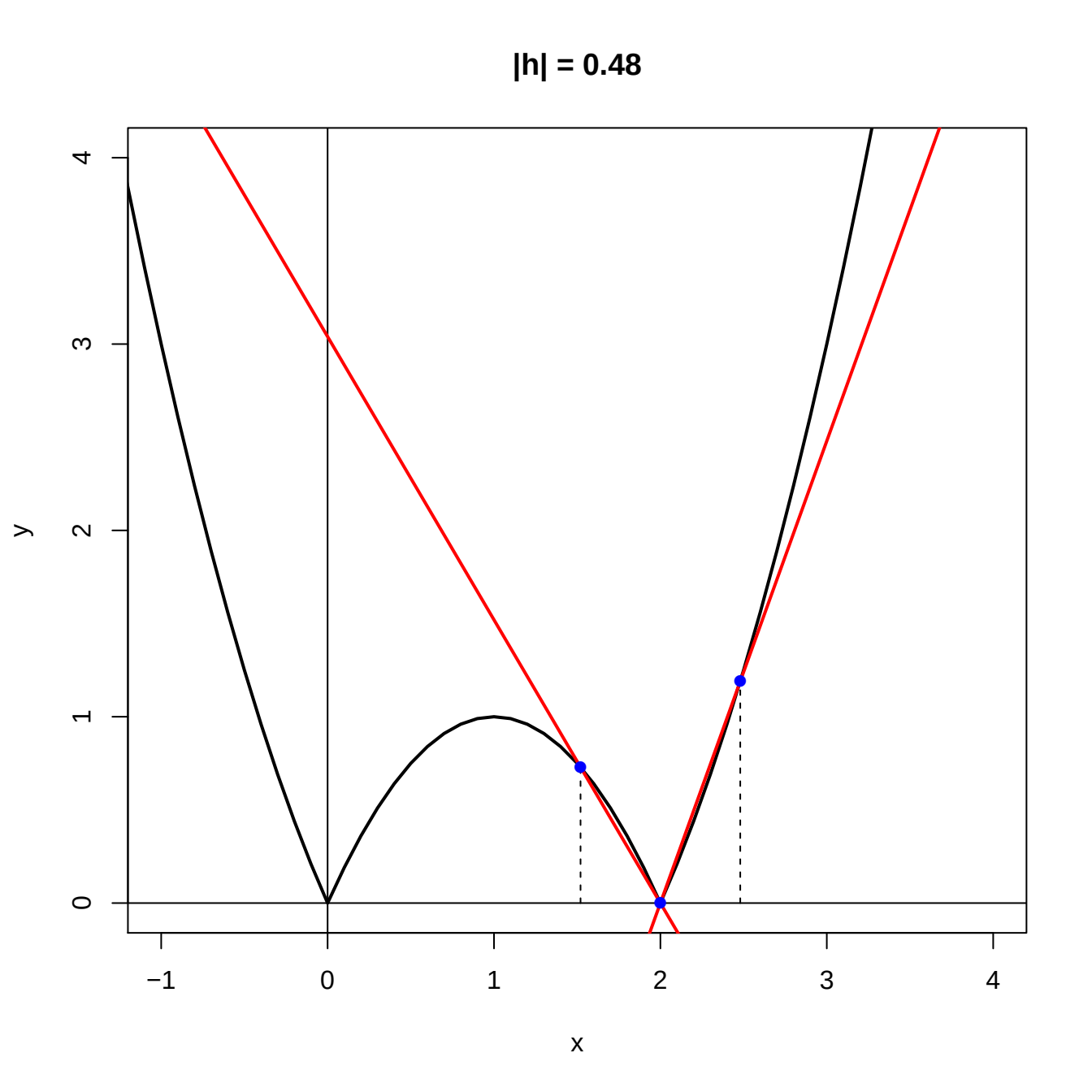
x
0
1
2
3
4
−1
0
1
2
3
4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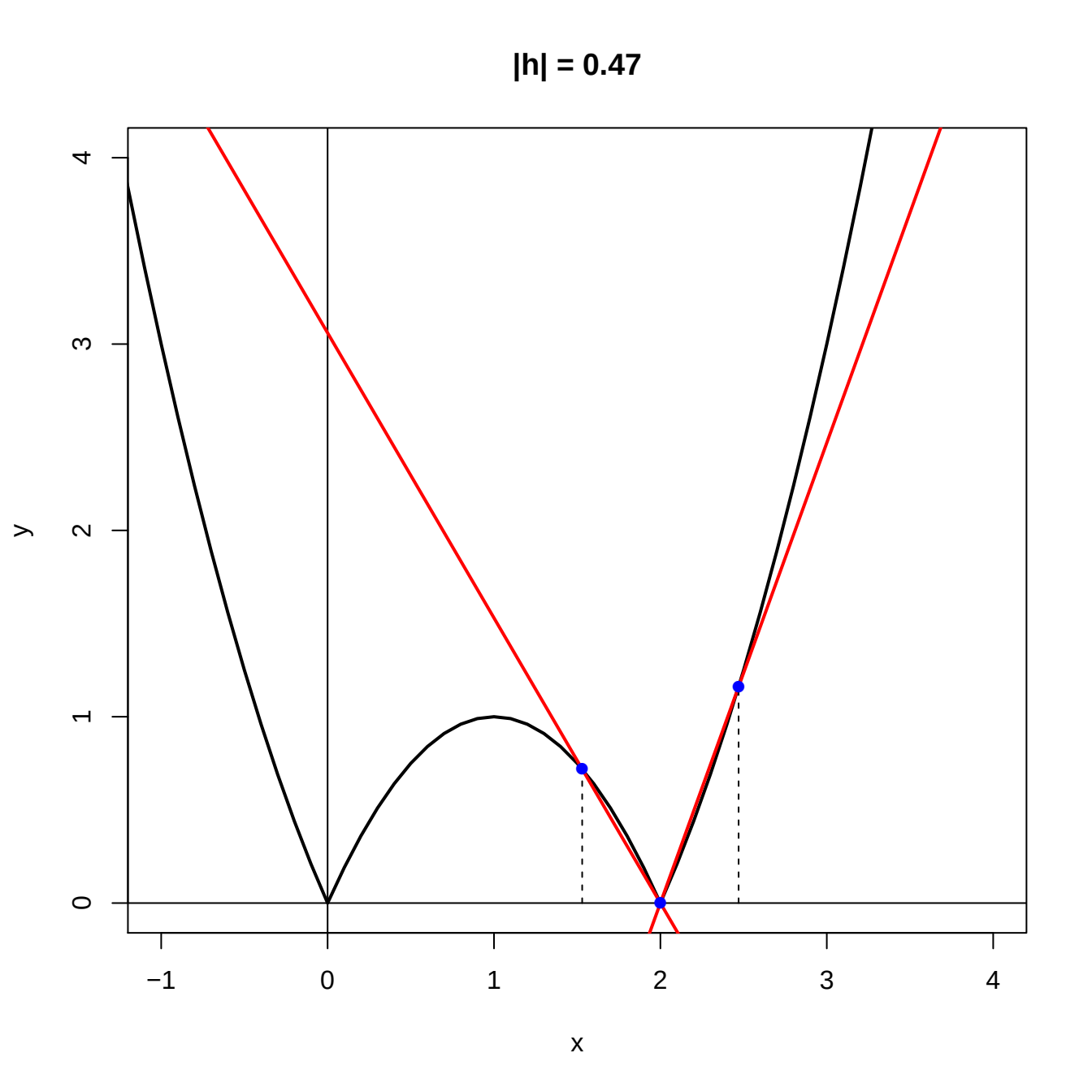
y
x
0
1
2
3
4
−1
0
1
2
3
4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x
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1
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3
4
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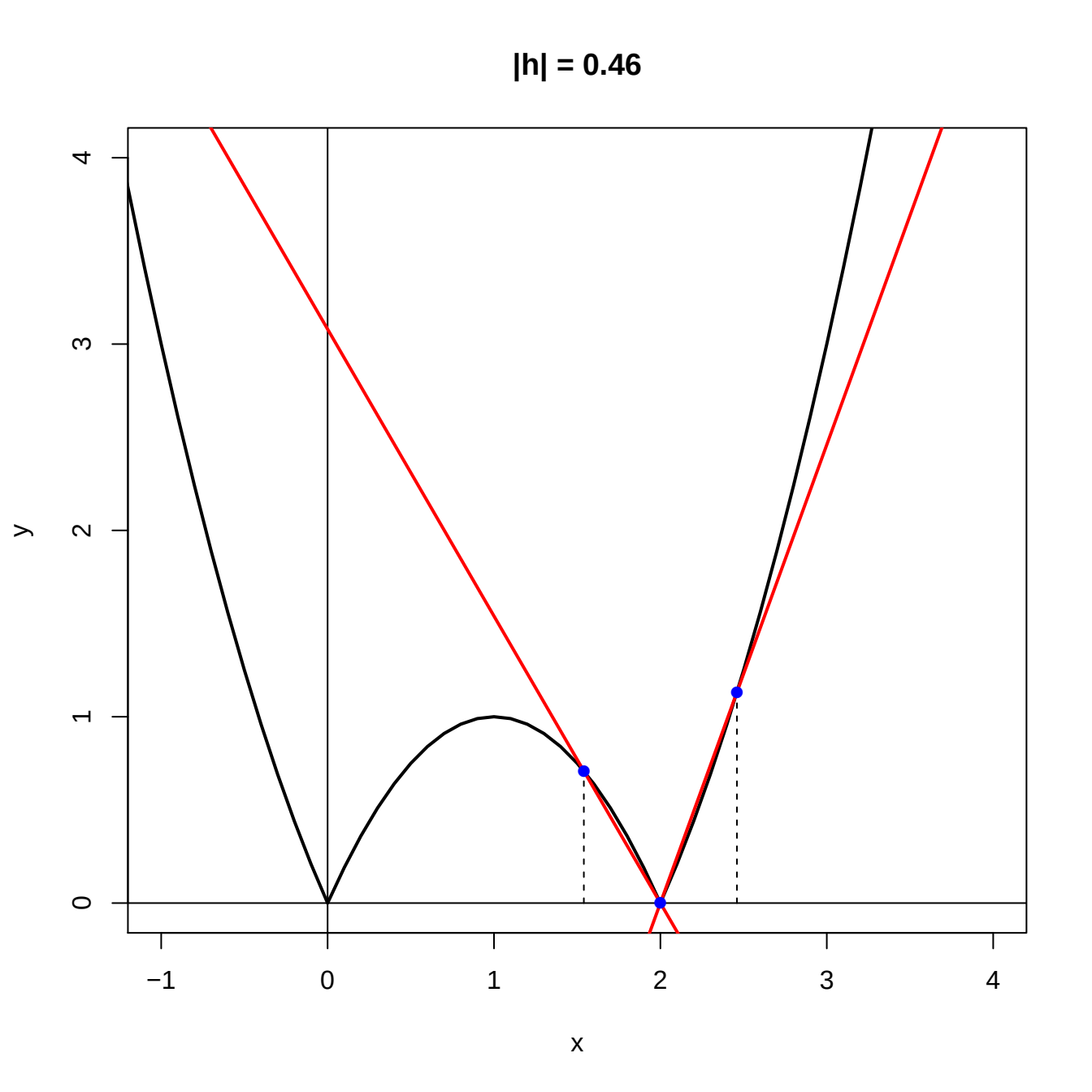
1
2
3
4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y
x
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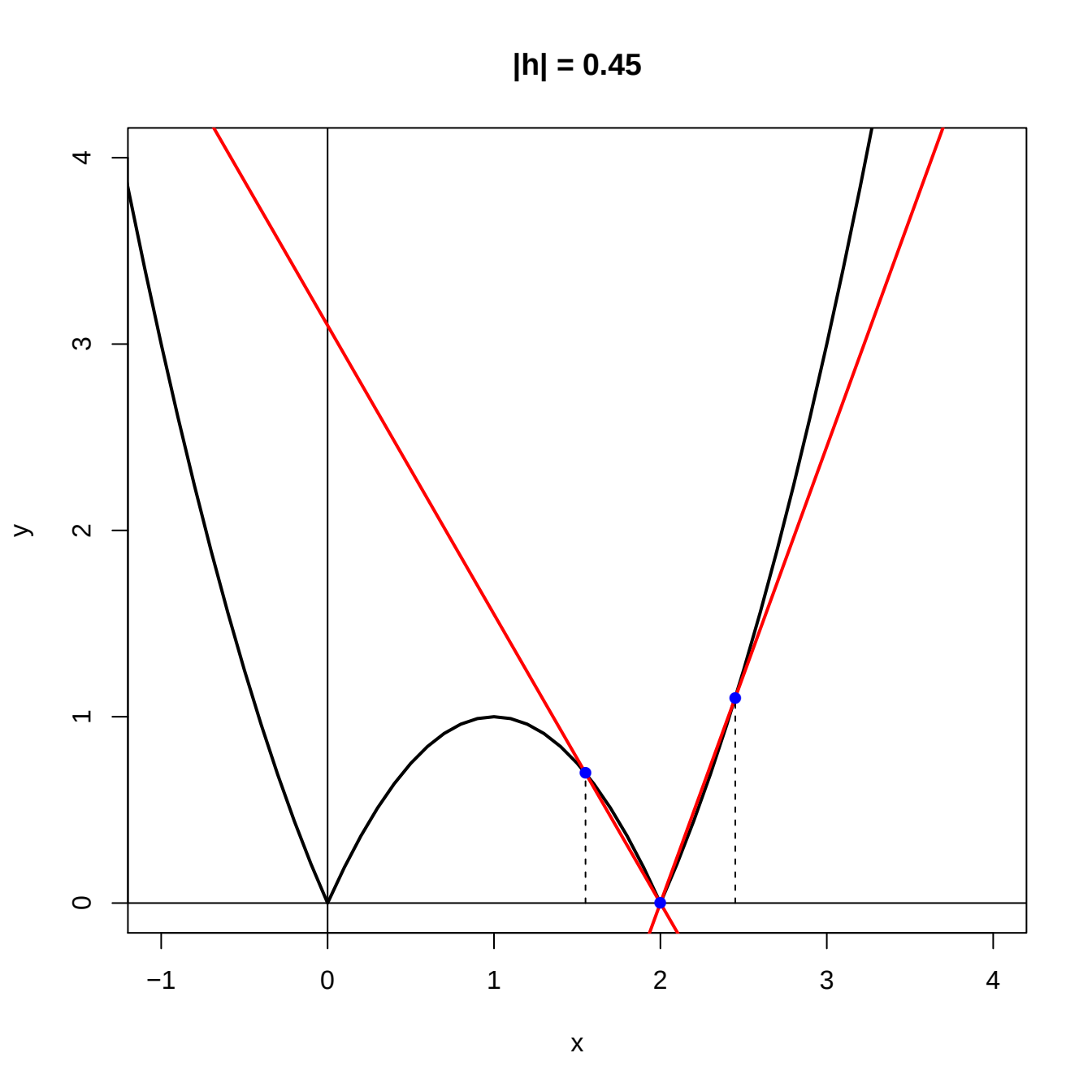
1
2
3
4
−1
0
1
2
3
4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x
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1
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3
4
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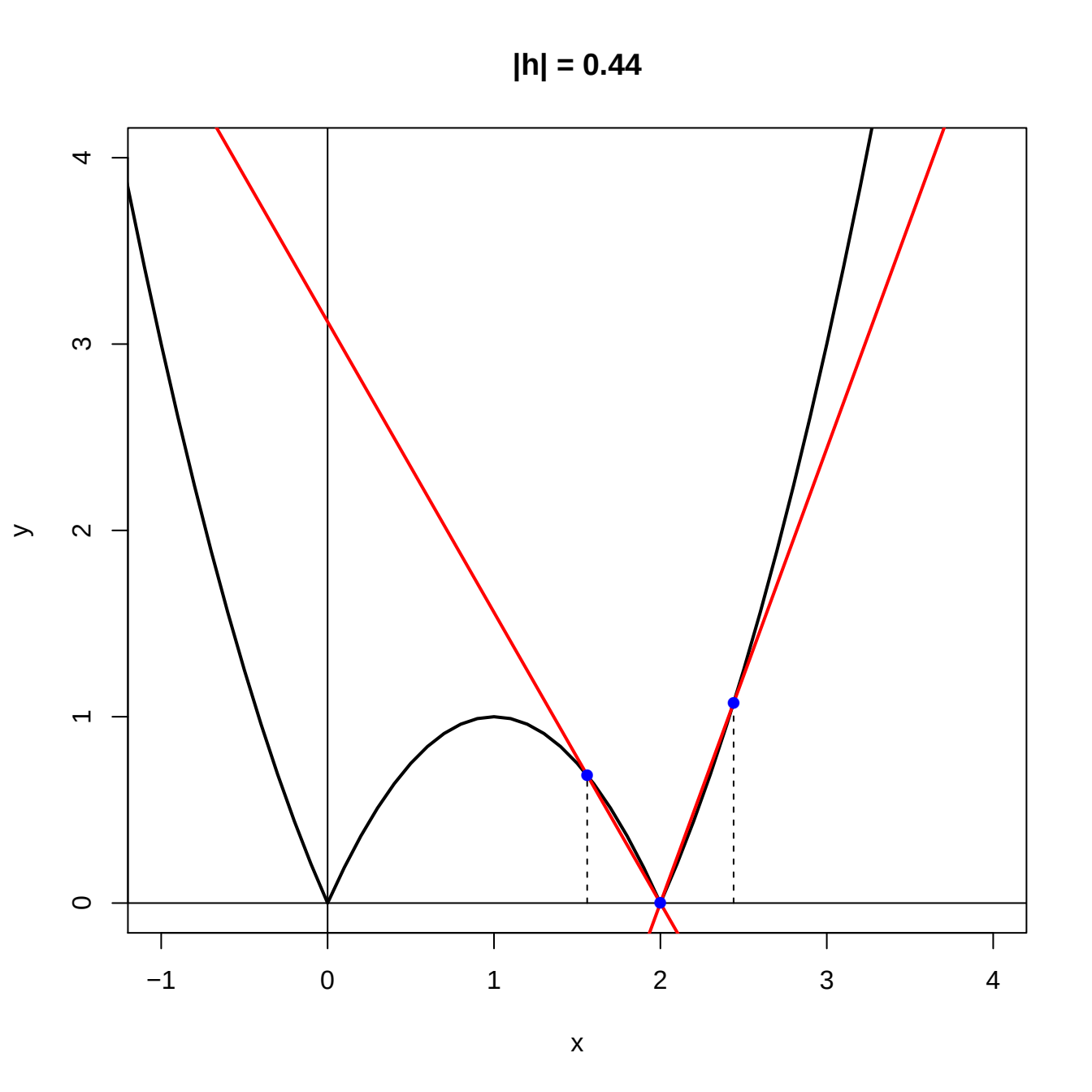
0
1
2
3
4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x
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4
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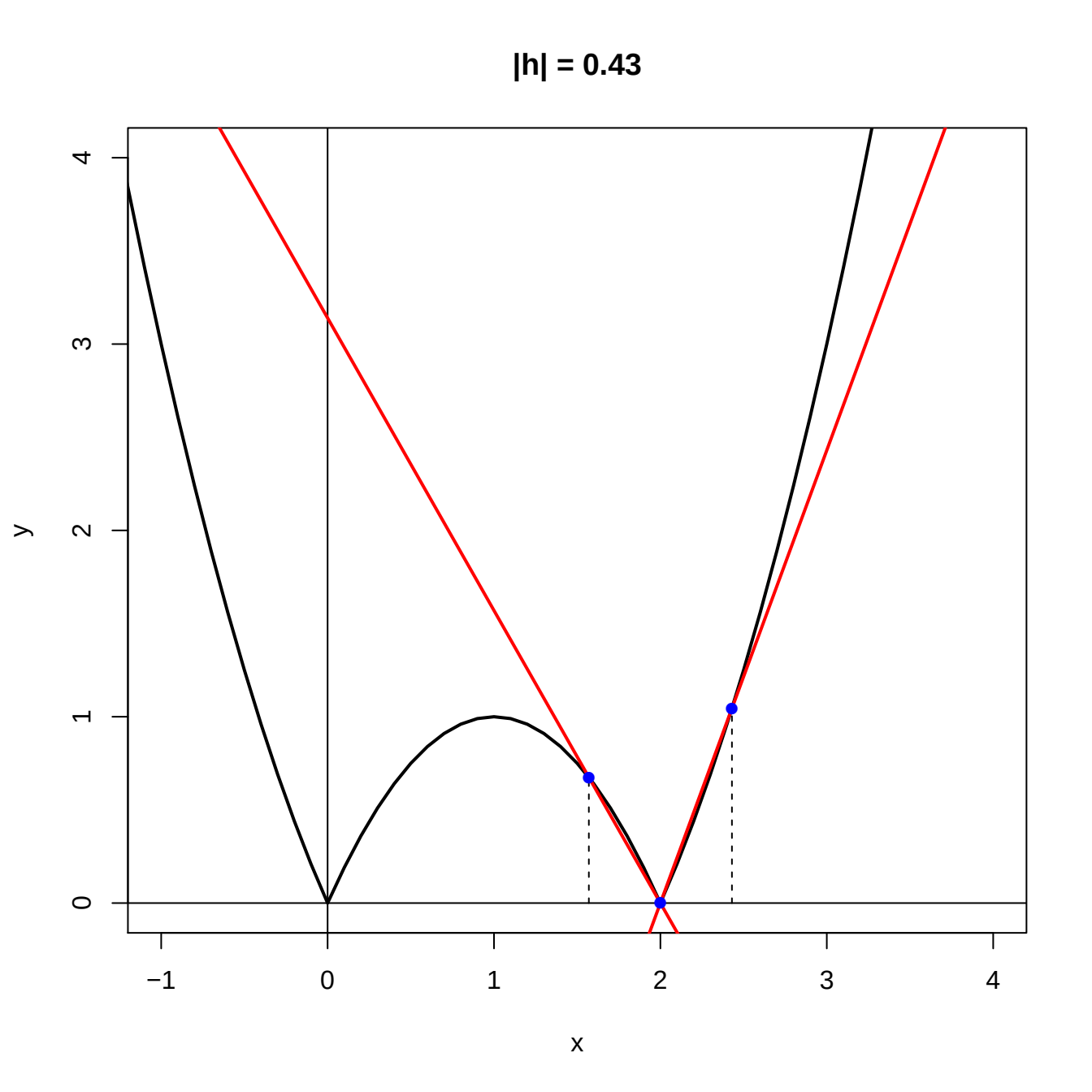
1
2
3
4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y
x
0
1
2
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4
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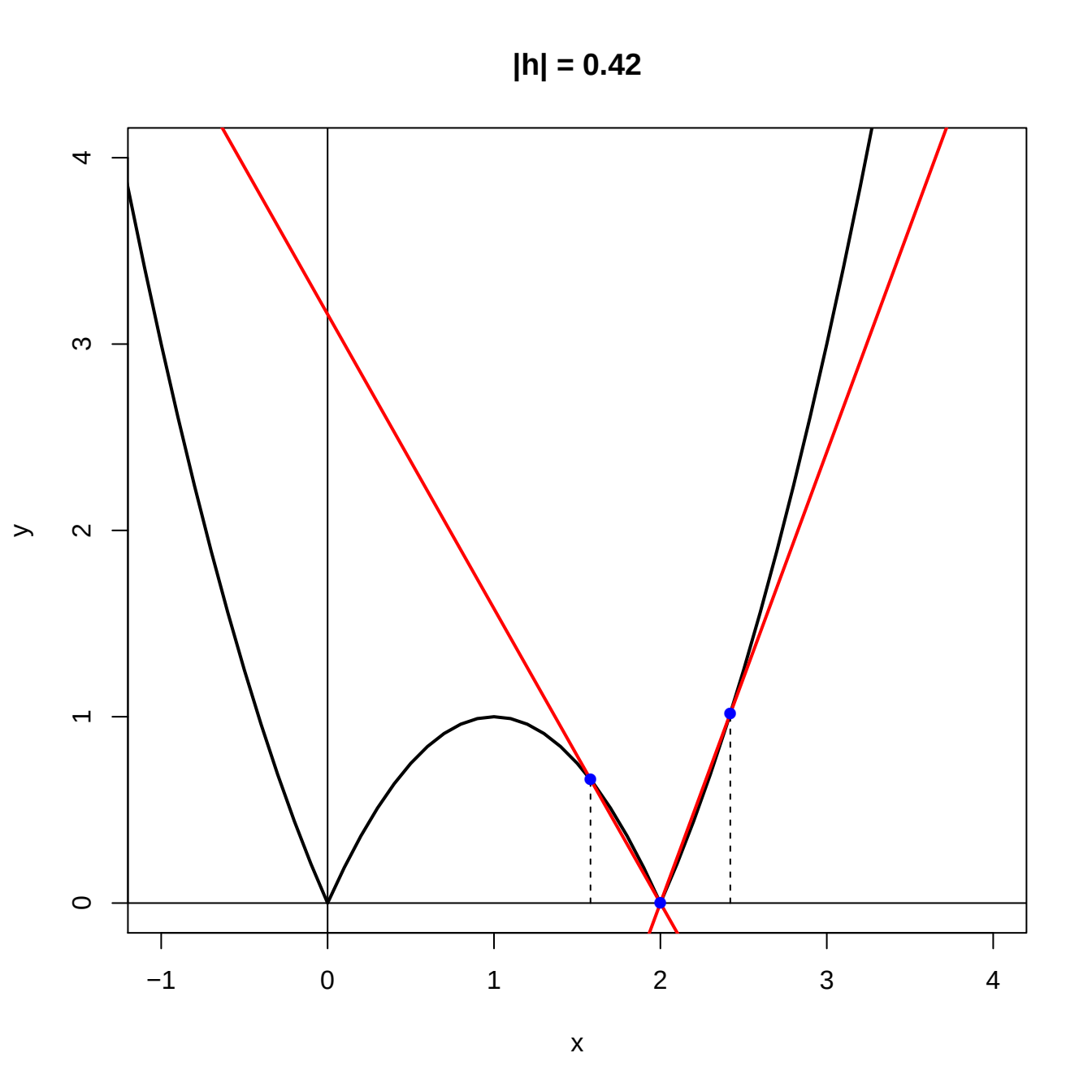
0
1
2
3
4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x
0
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4
−1
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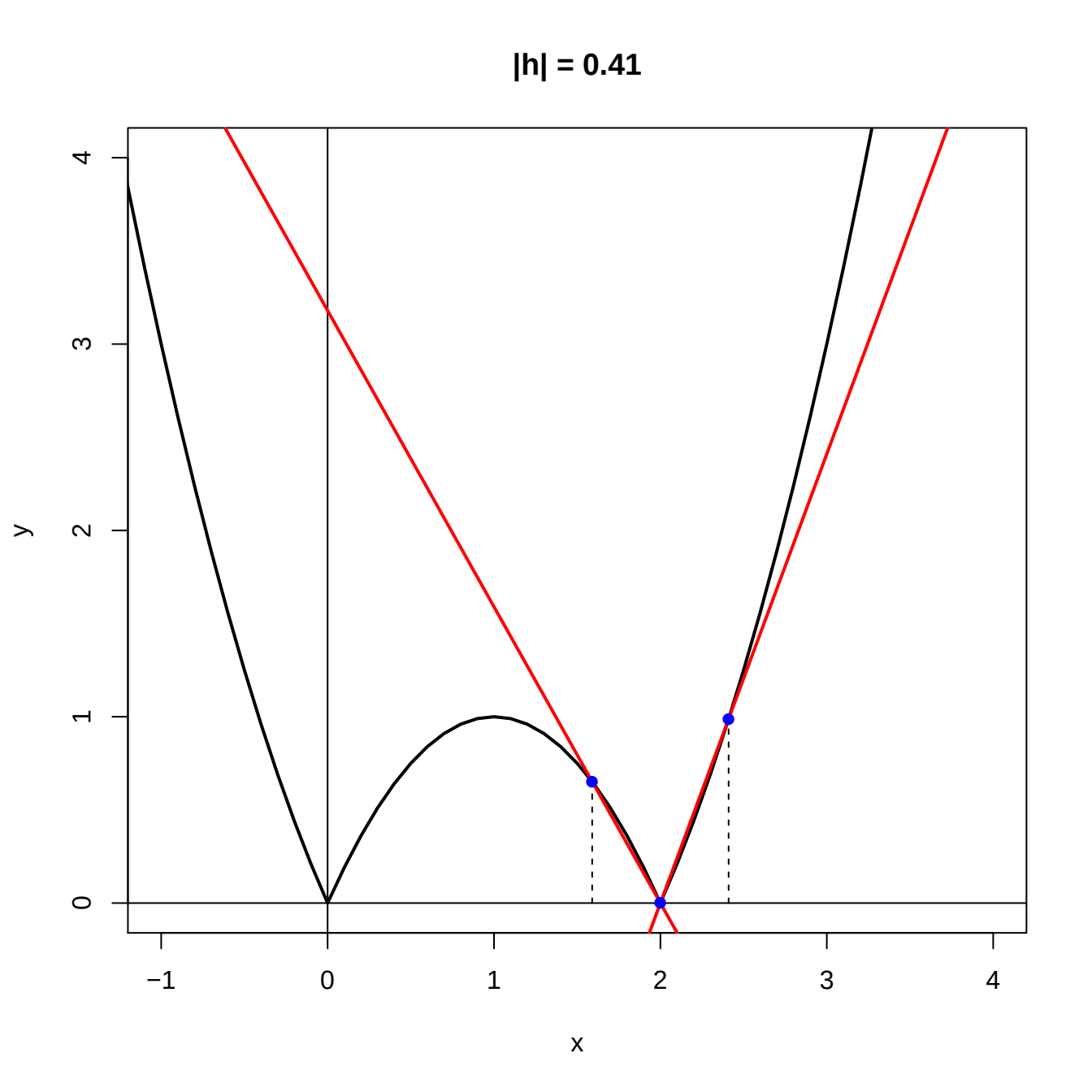
1
2
3
4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x
0
1
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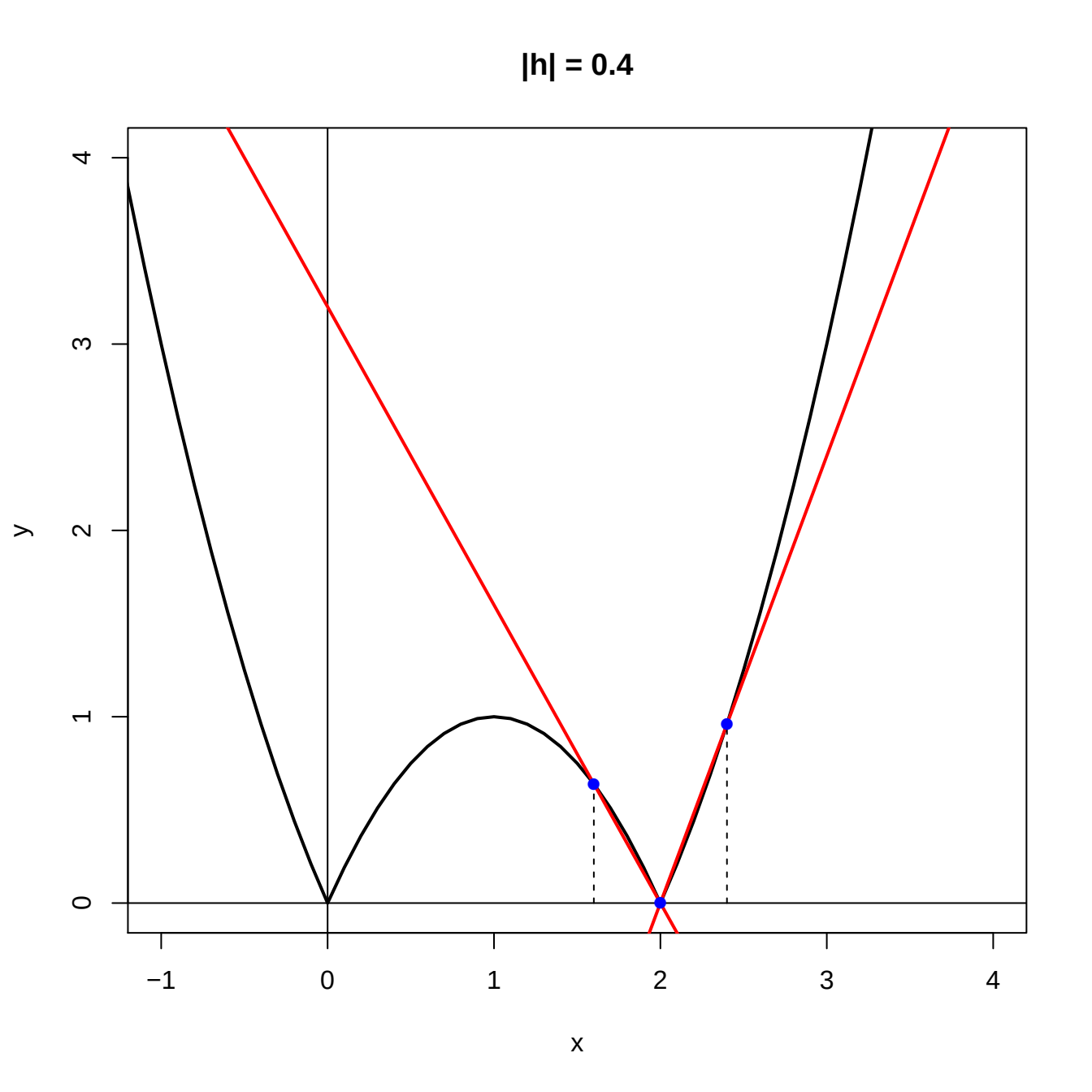
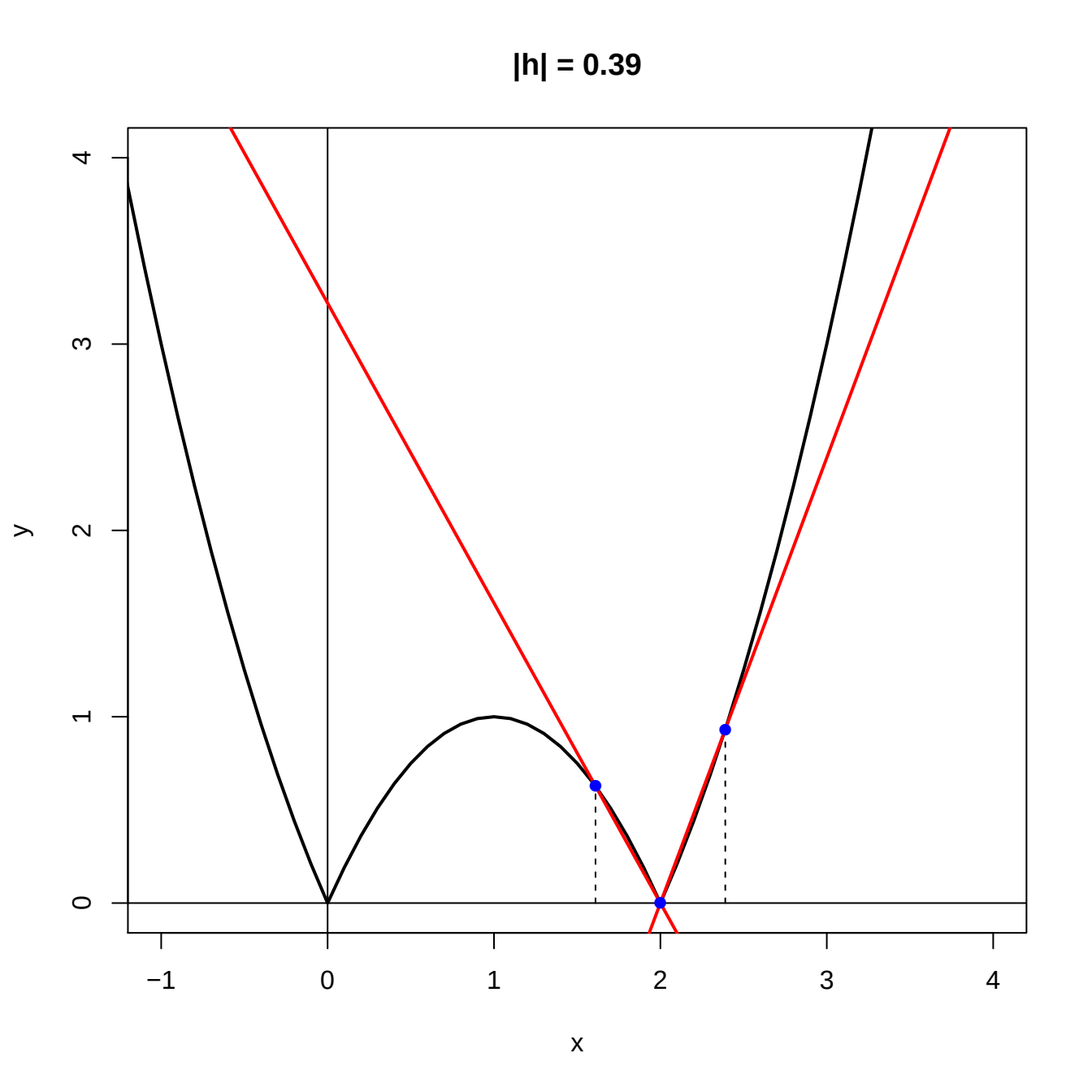
4
−1
0
1
2
3
4


|h| = 0.4
y
x
0
1
2
3
4
−1
0
1
2
3
4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x
0
1
2
3
4
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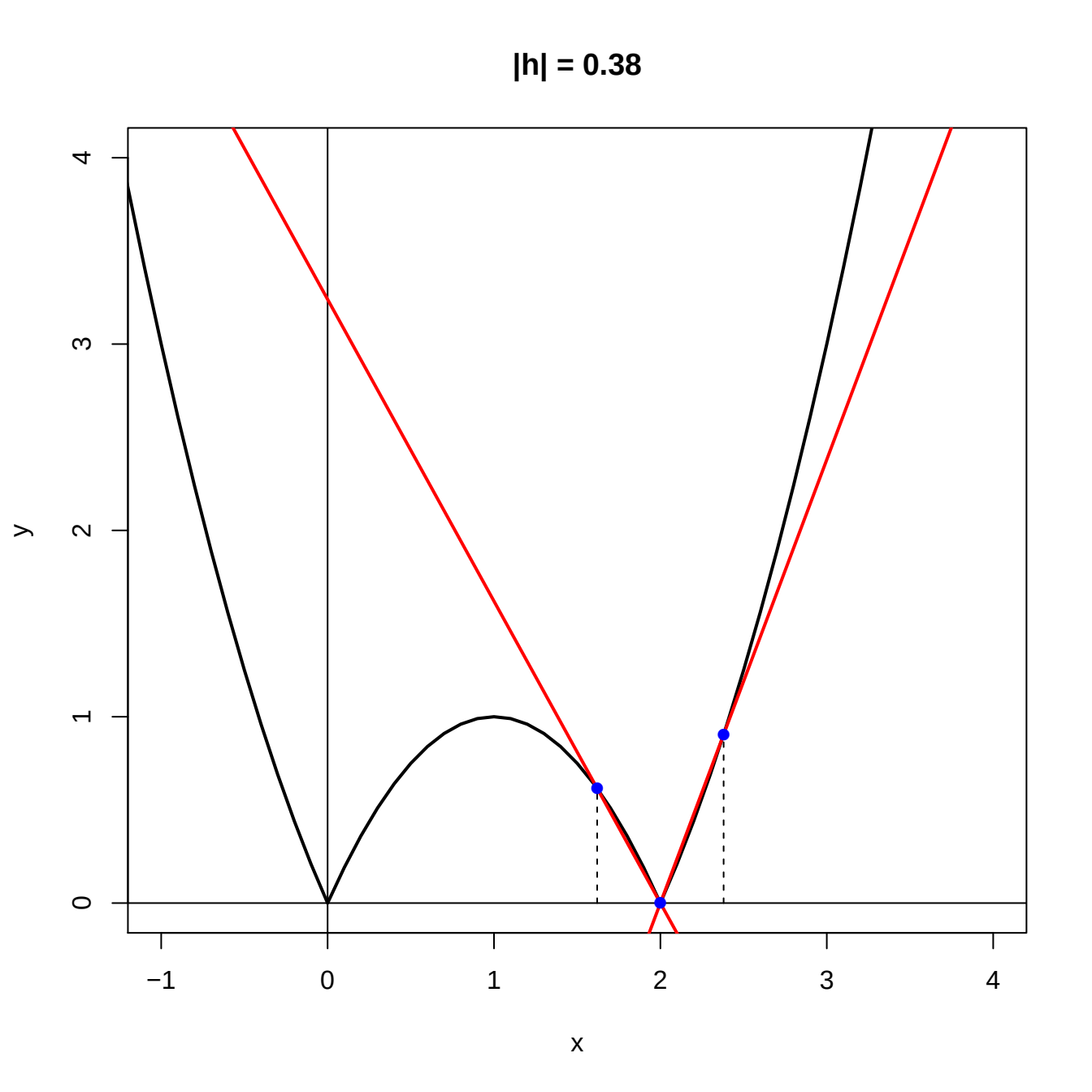
0
1
2
3
4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x
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1
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4
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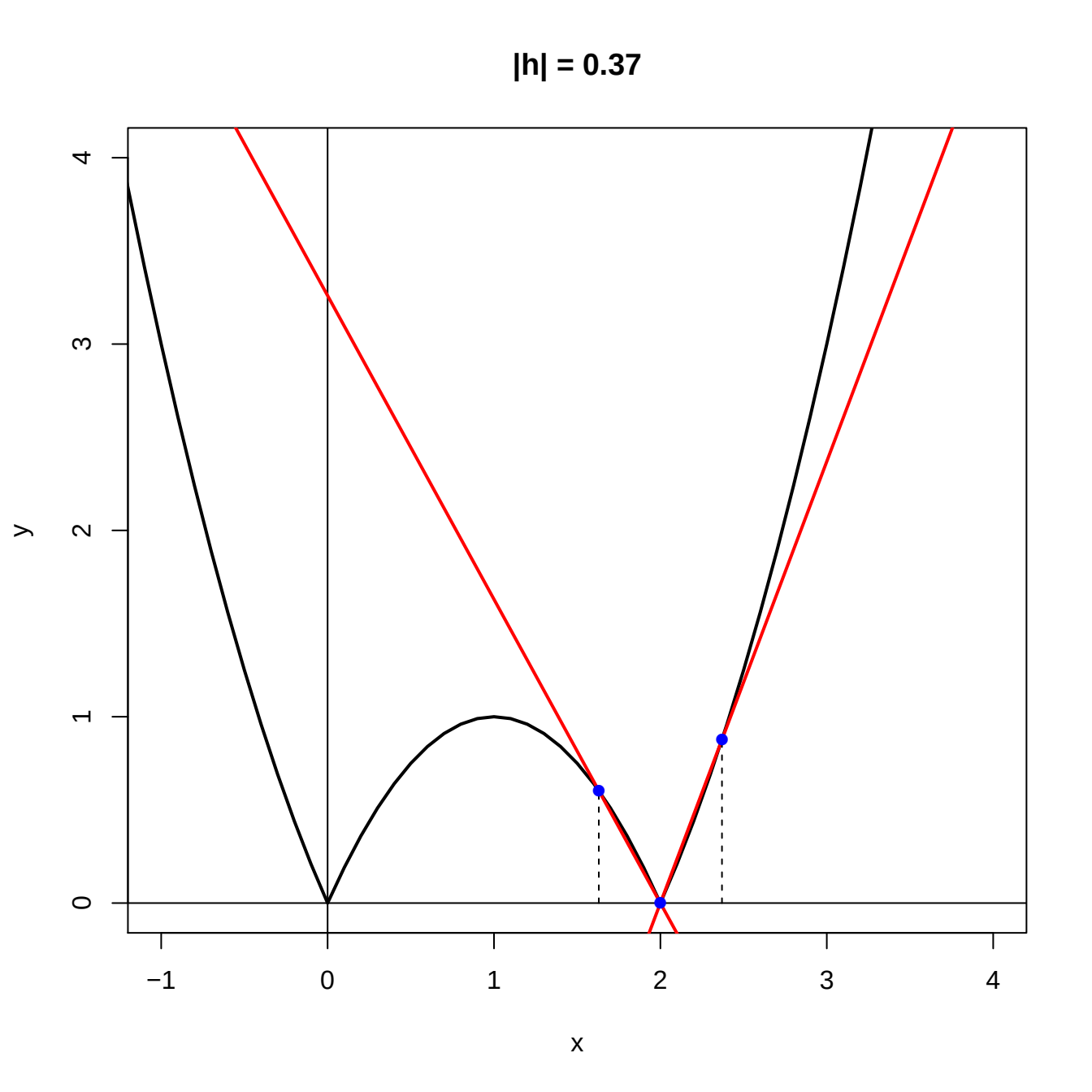
1
2
3
4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x
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3
4
−1
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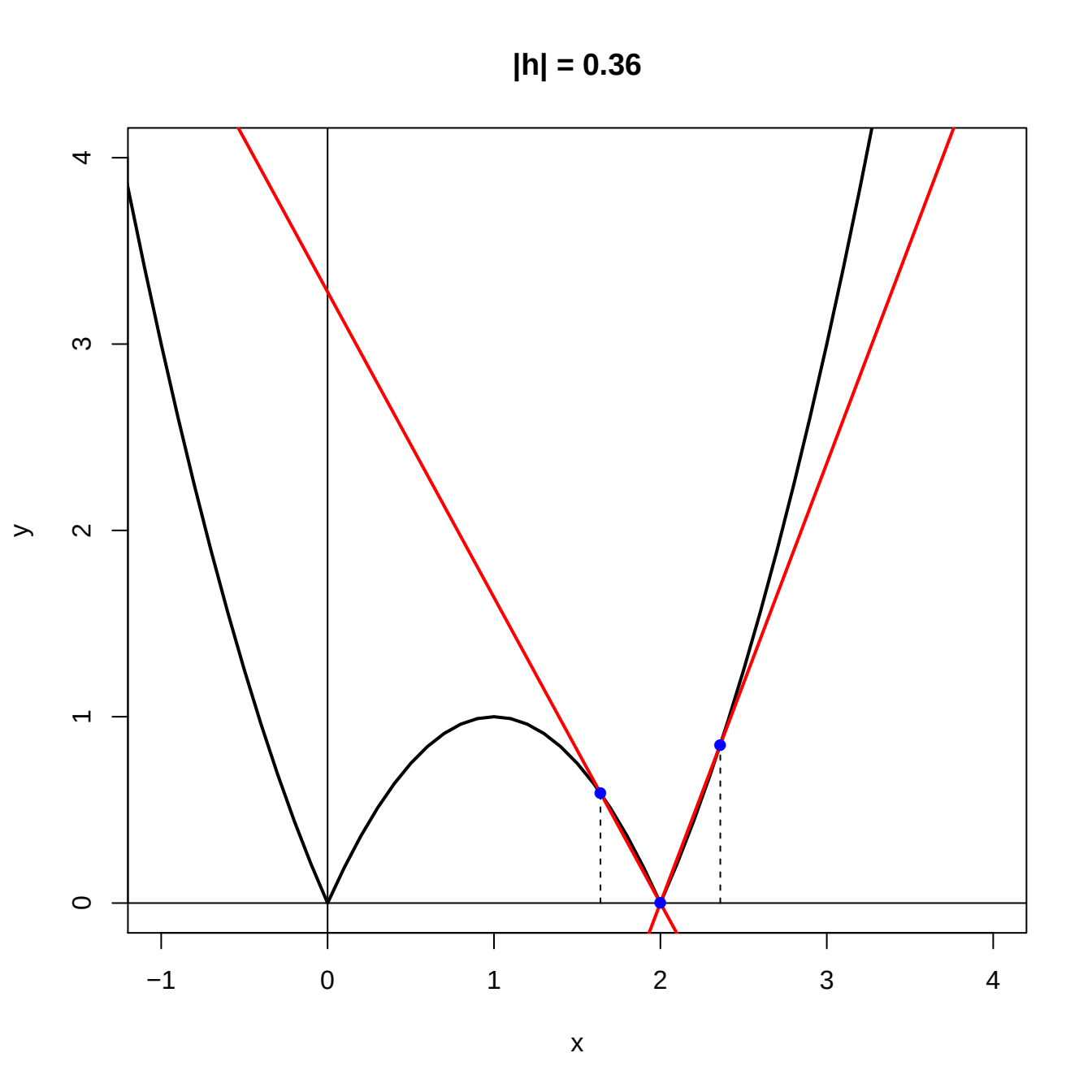
1
2
3
4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x
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1
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4
−1
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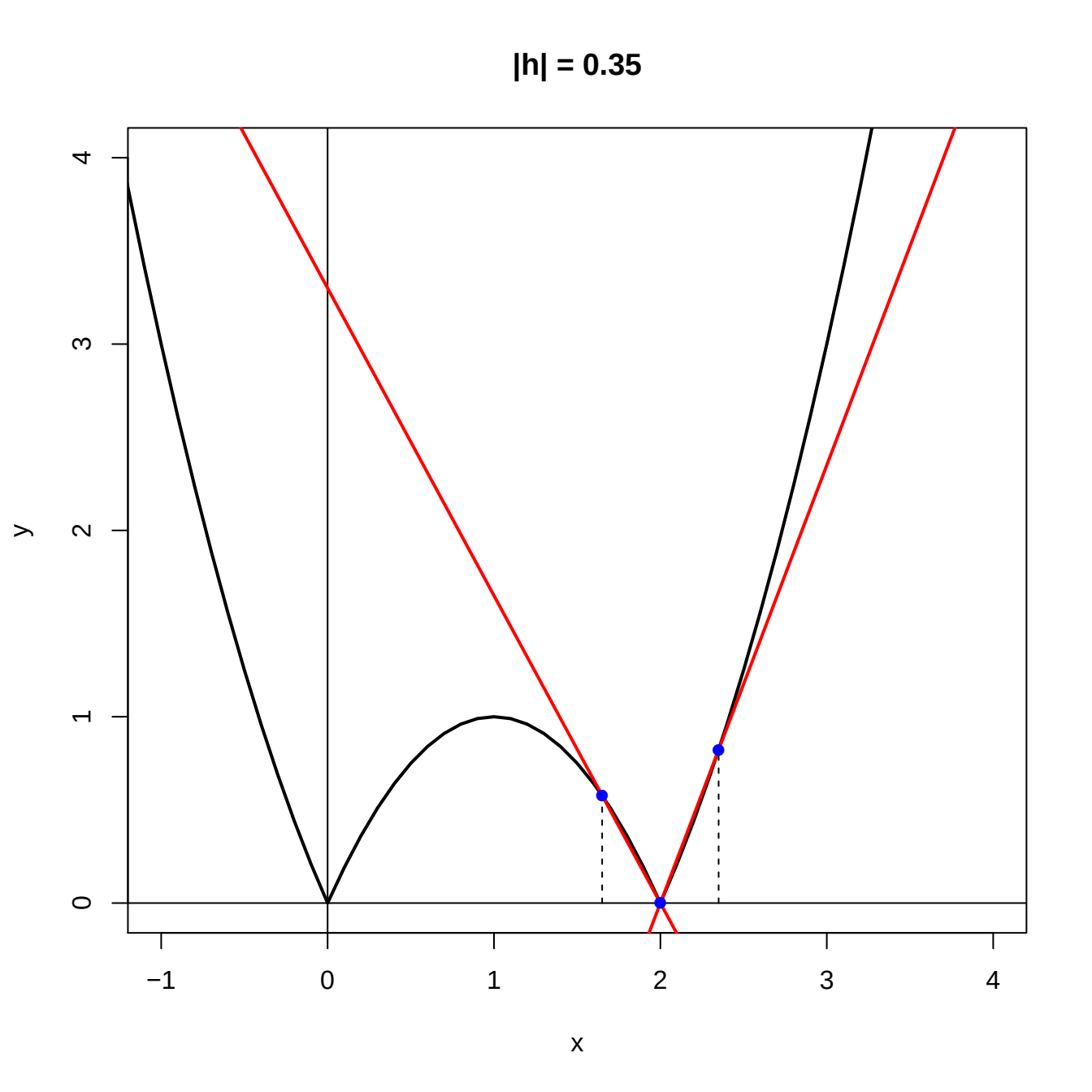
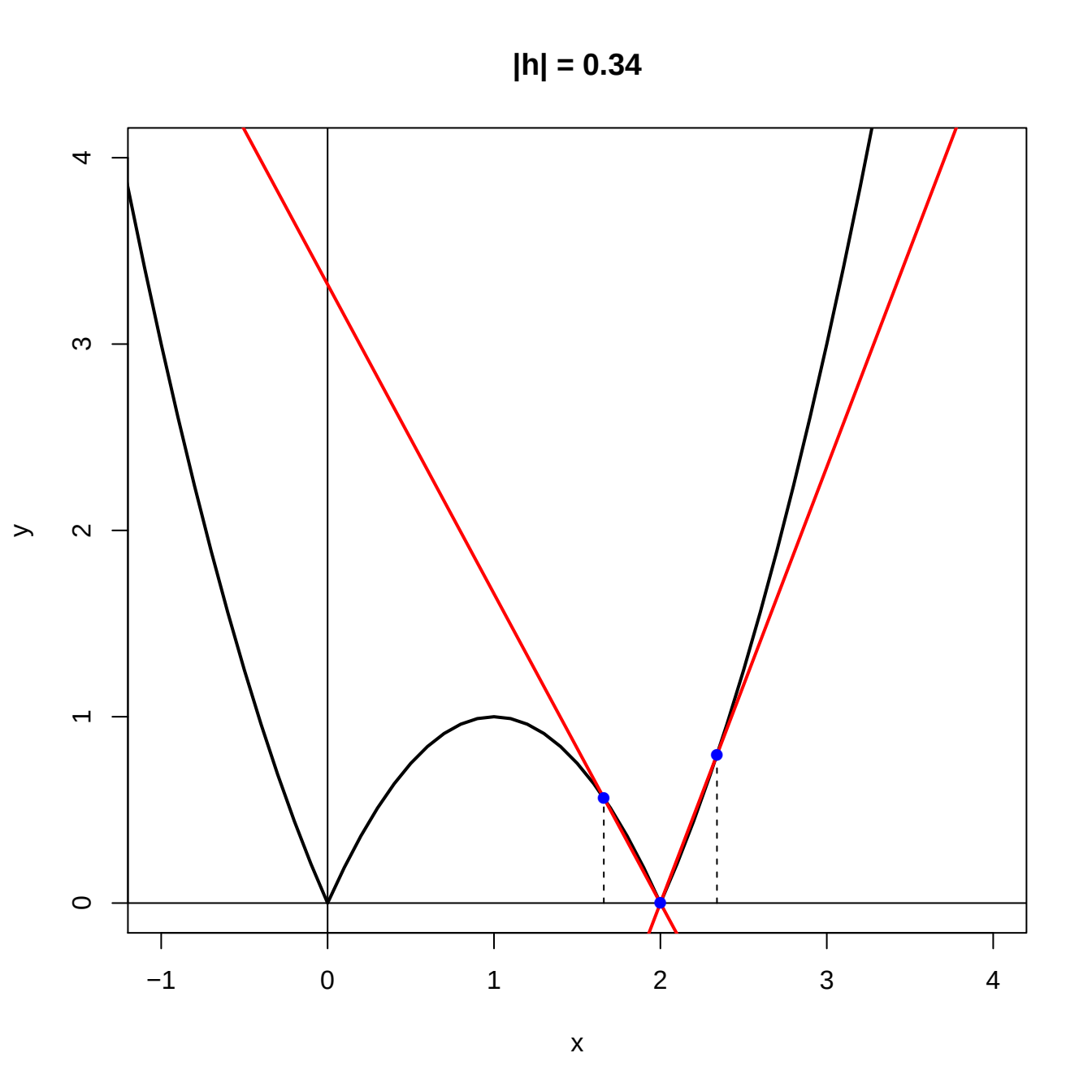
1
2
3
4


|h| = 0.35
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.34
y
x
0
1
2
3
4
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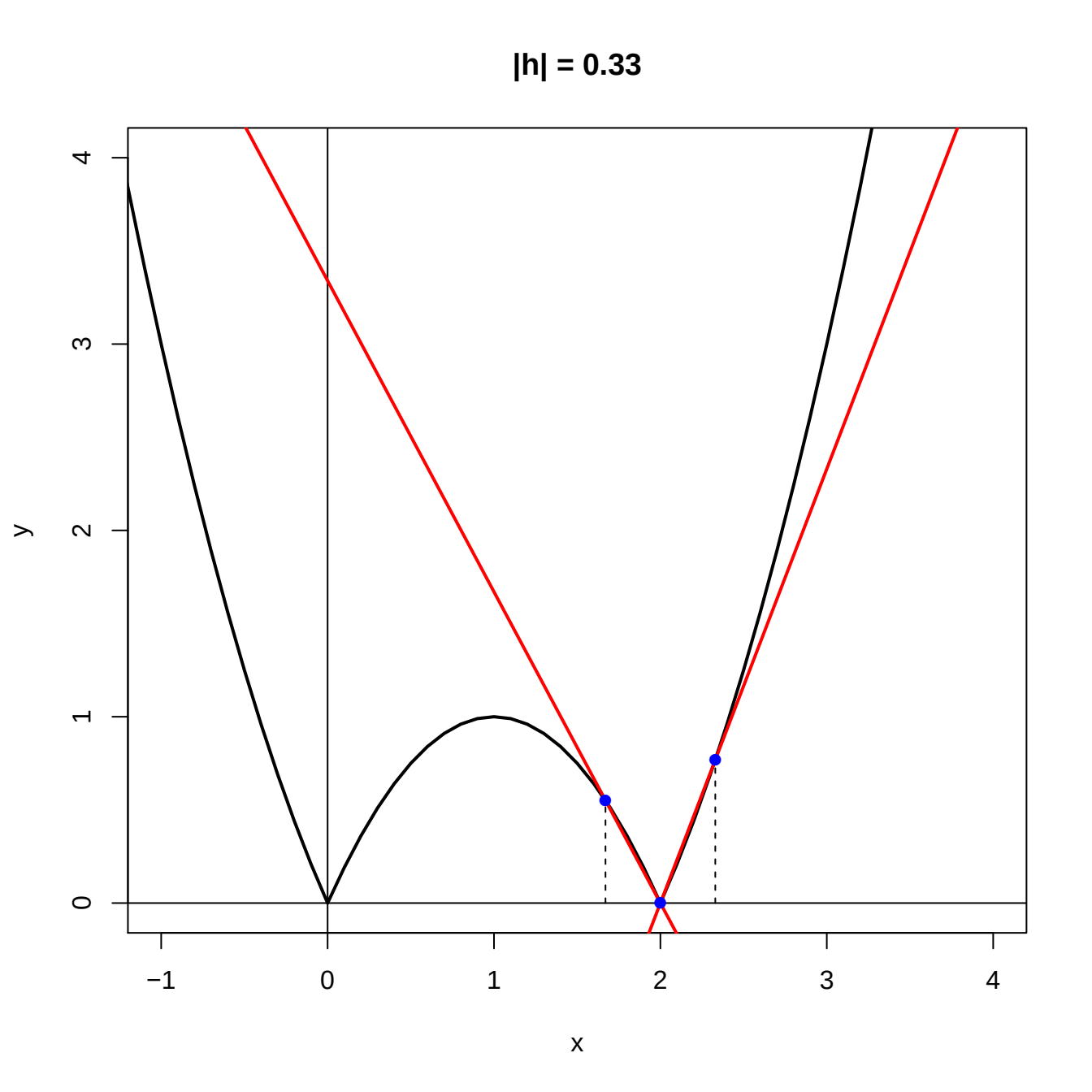
0
1
2
3
4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x
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2
3
4
−1
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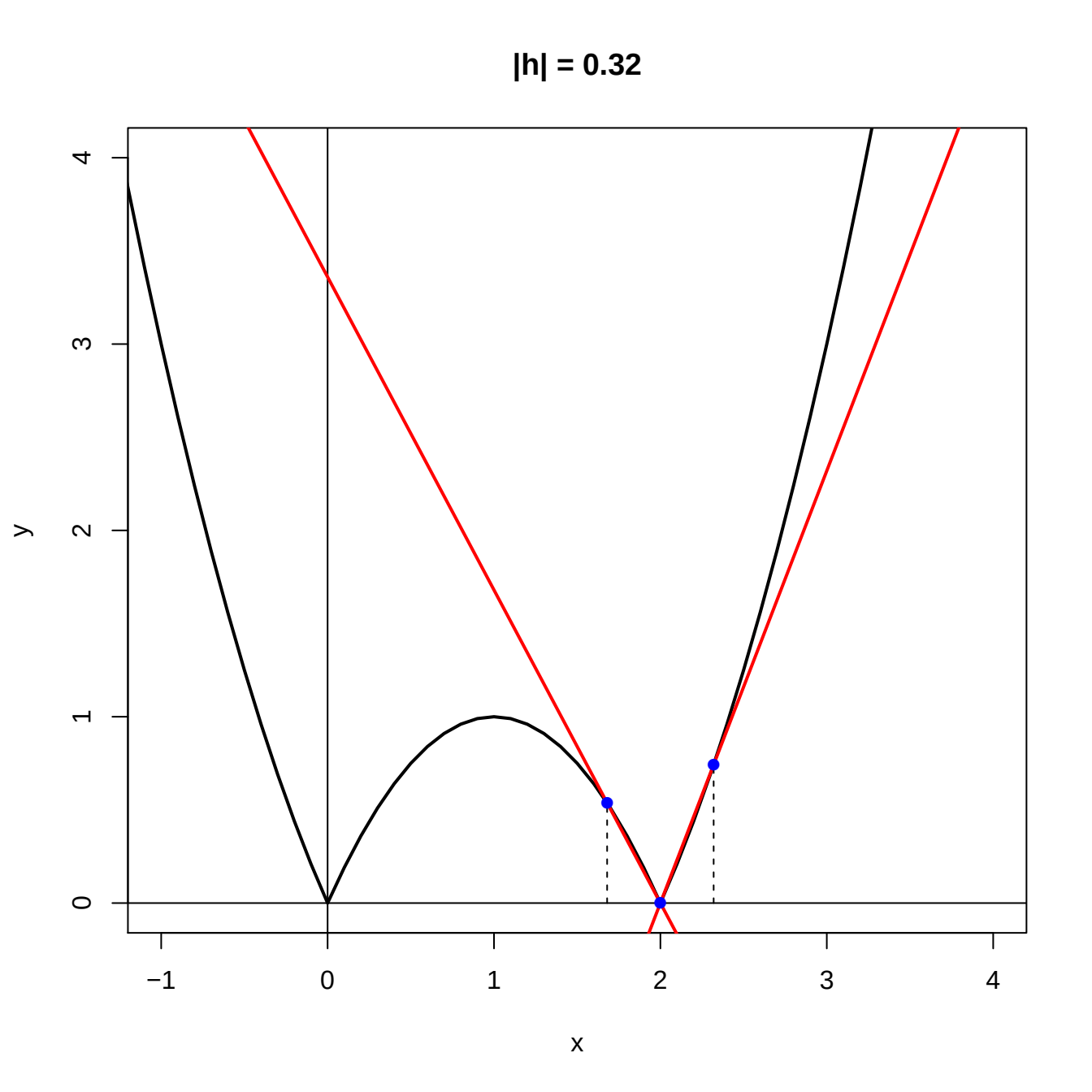
1
2
3
4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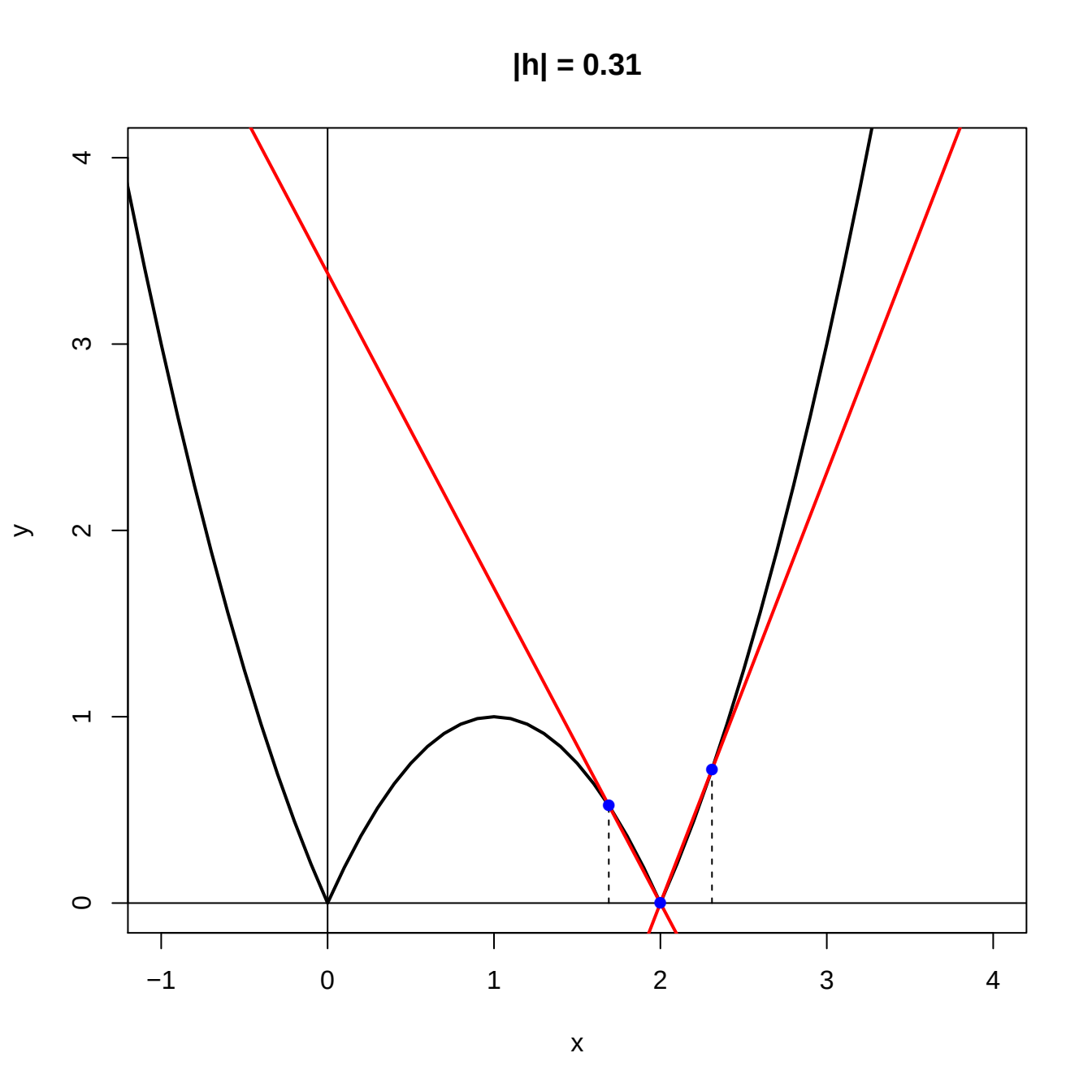
1
2
3
4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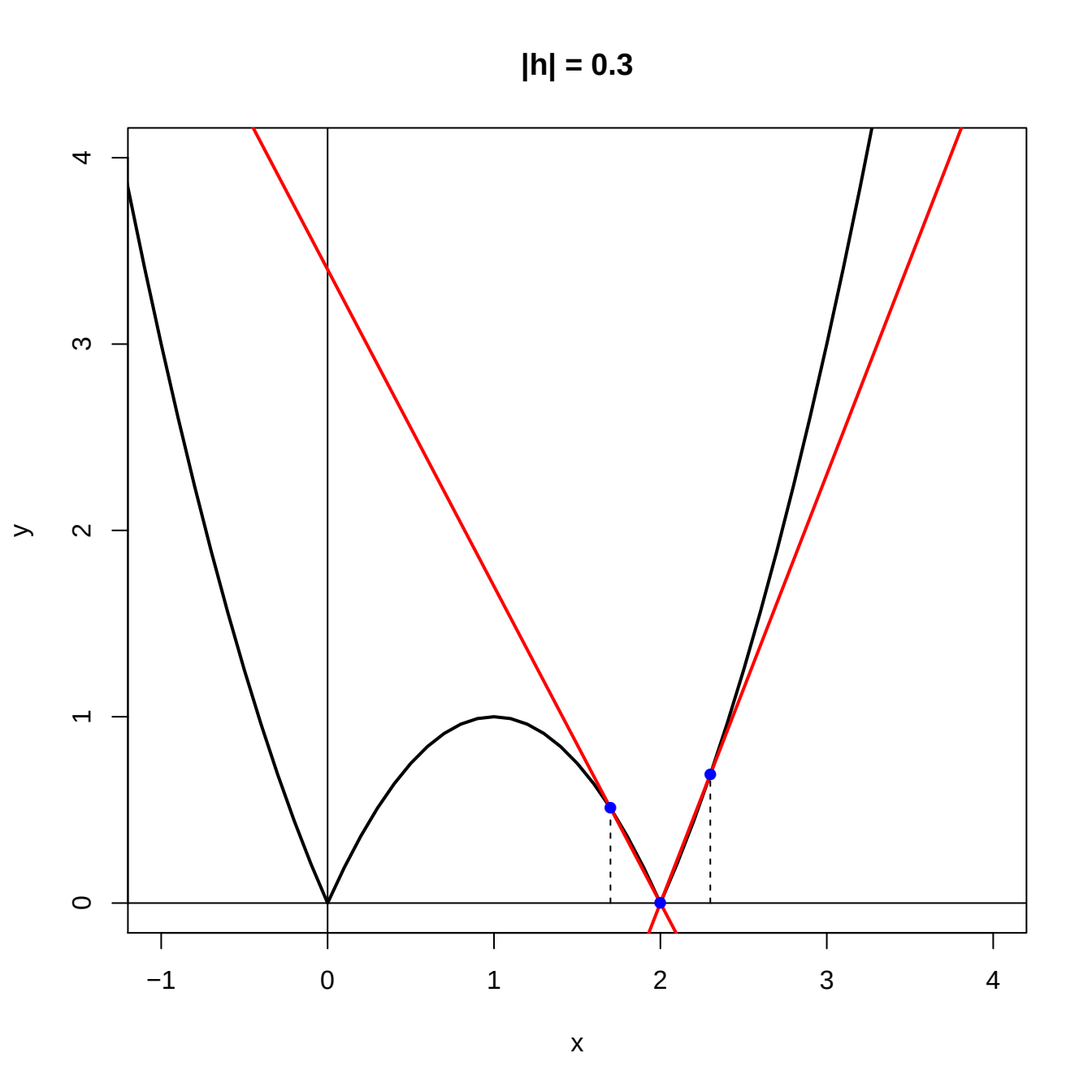
1
2
3
4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x
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4
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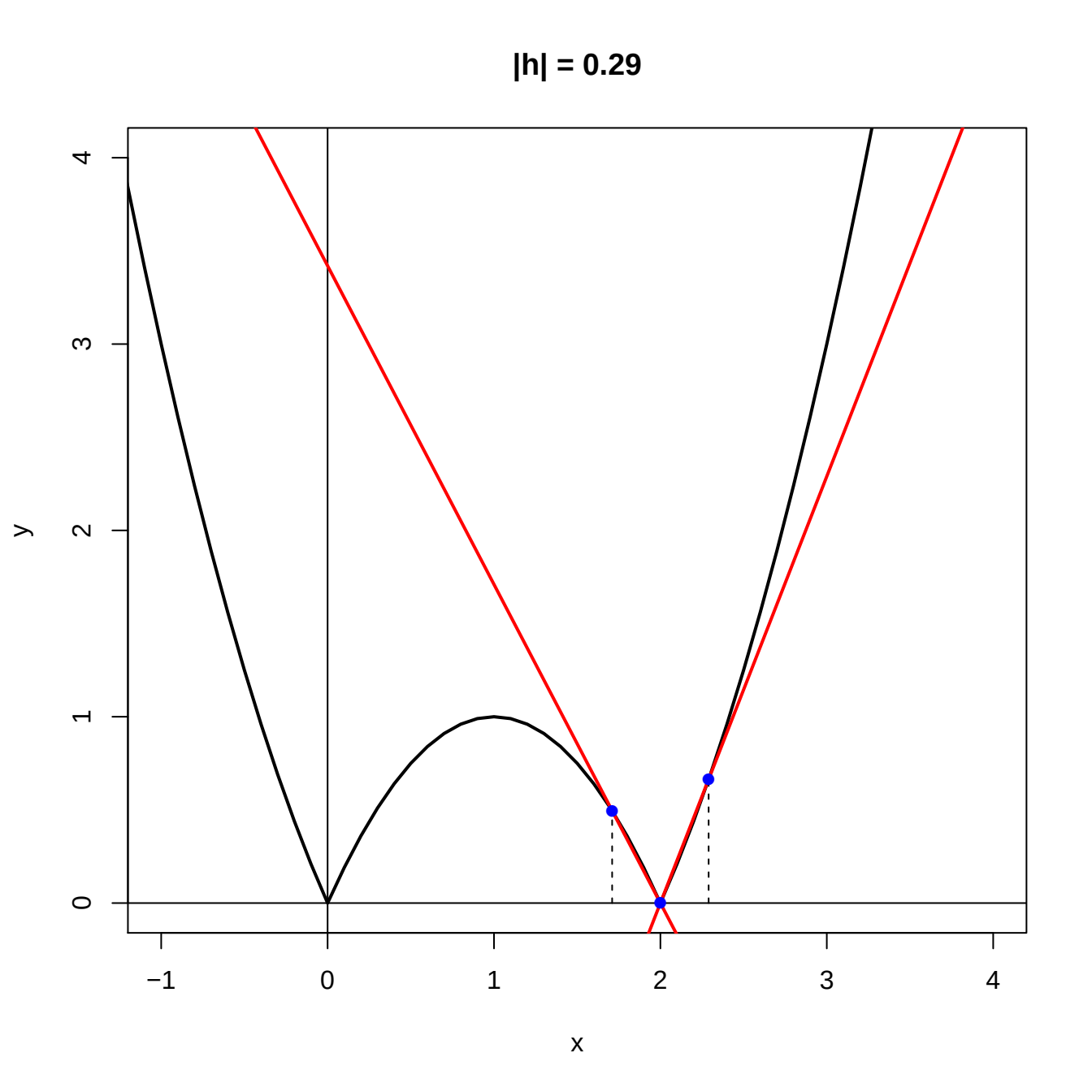
1
2
3
4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4
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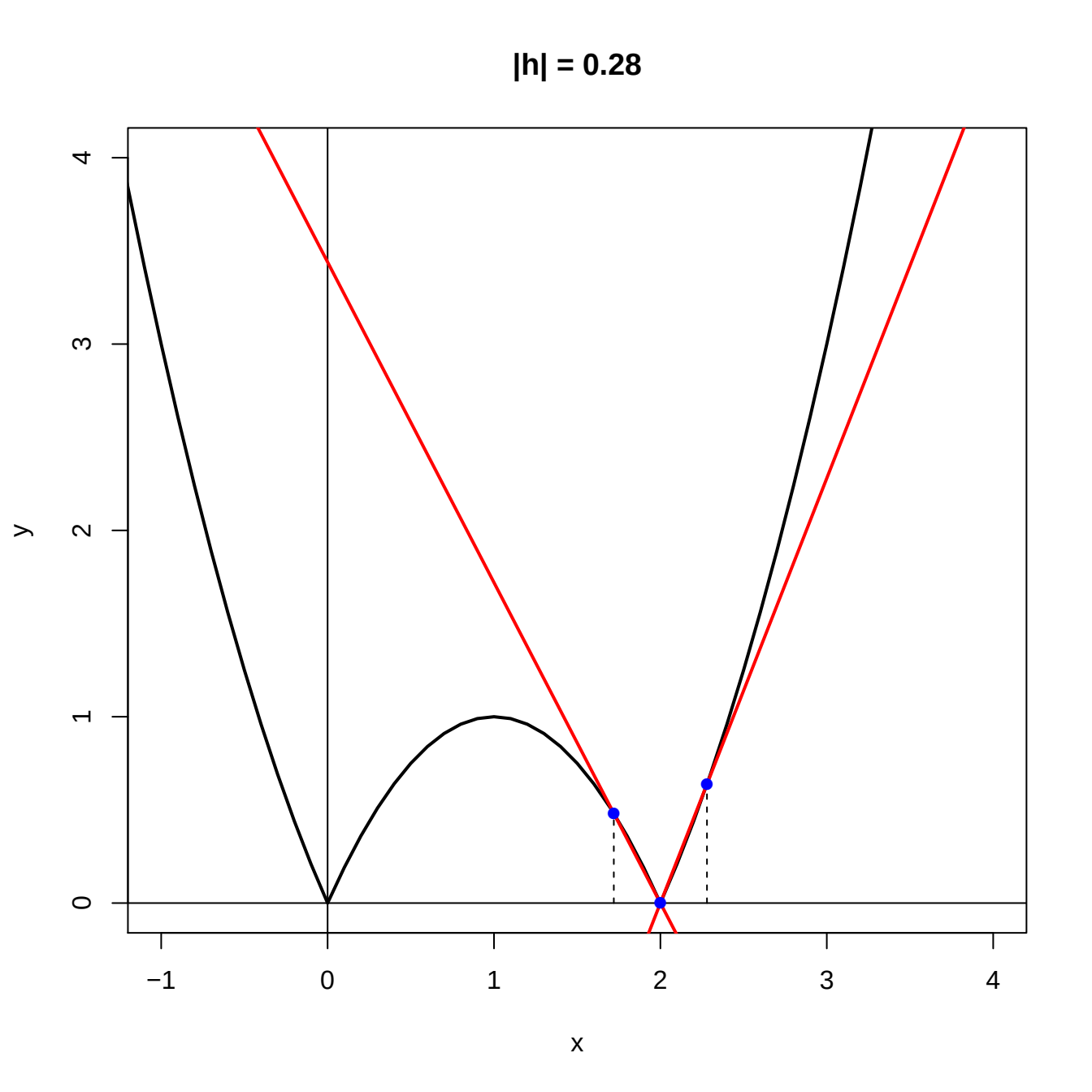
1
2
3
4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x
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3
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1
2
3
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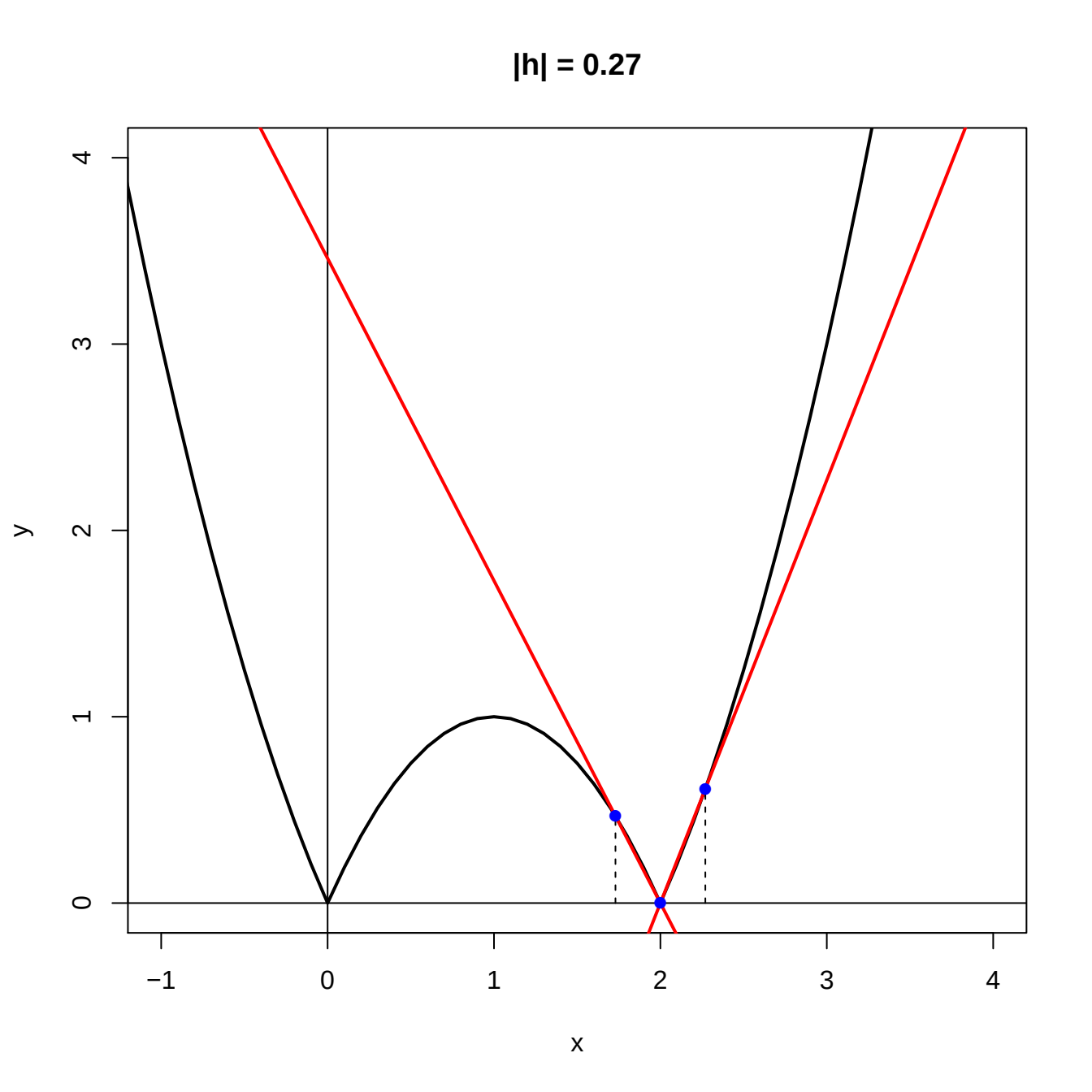
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x
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3
4
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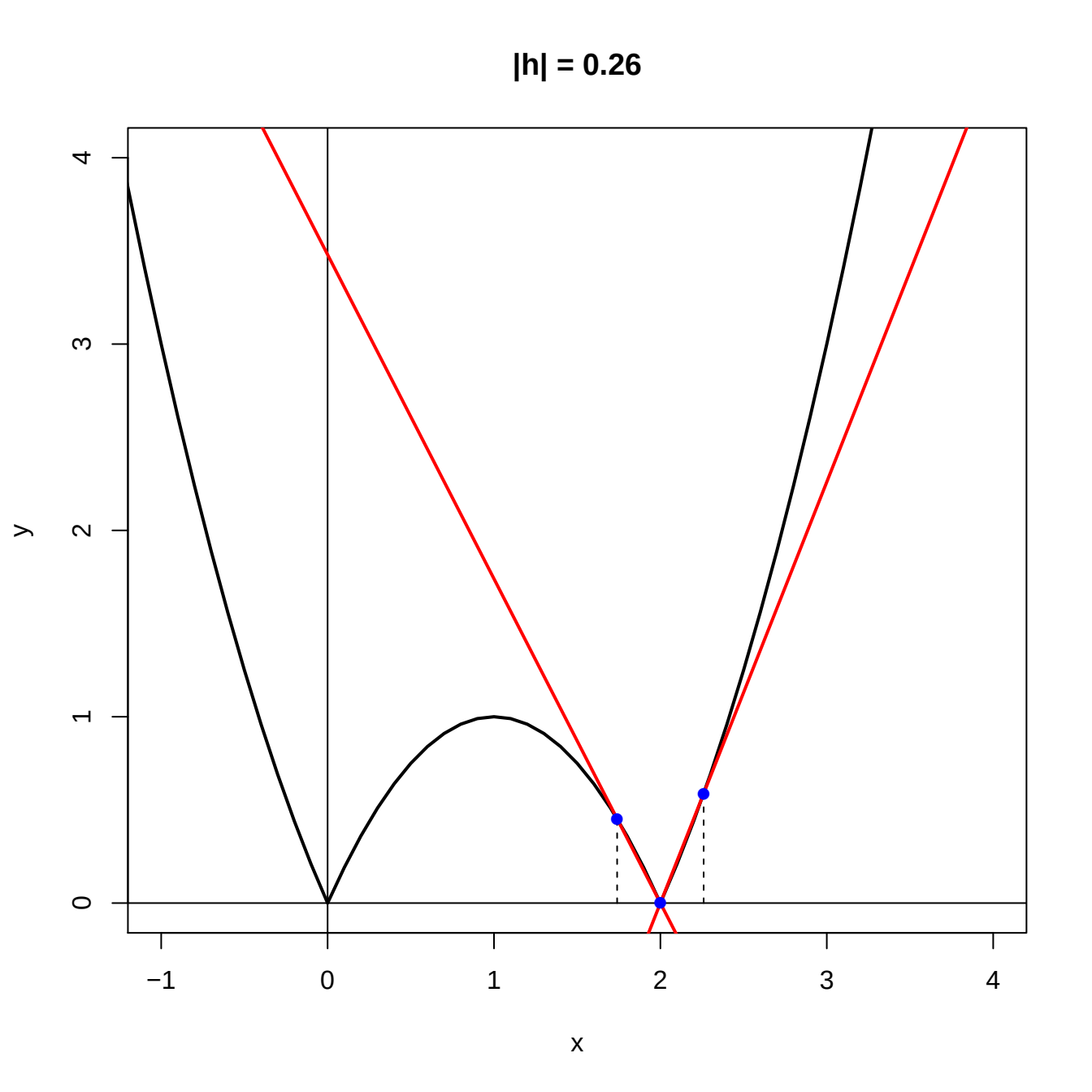
1
2
3
4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x
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4
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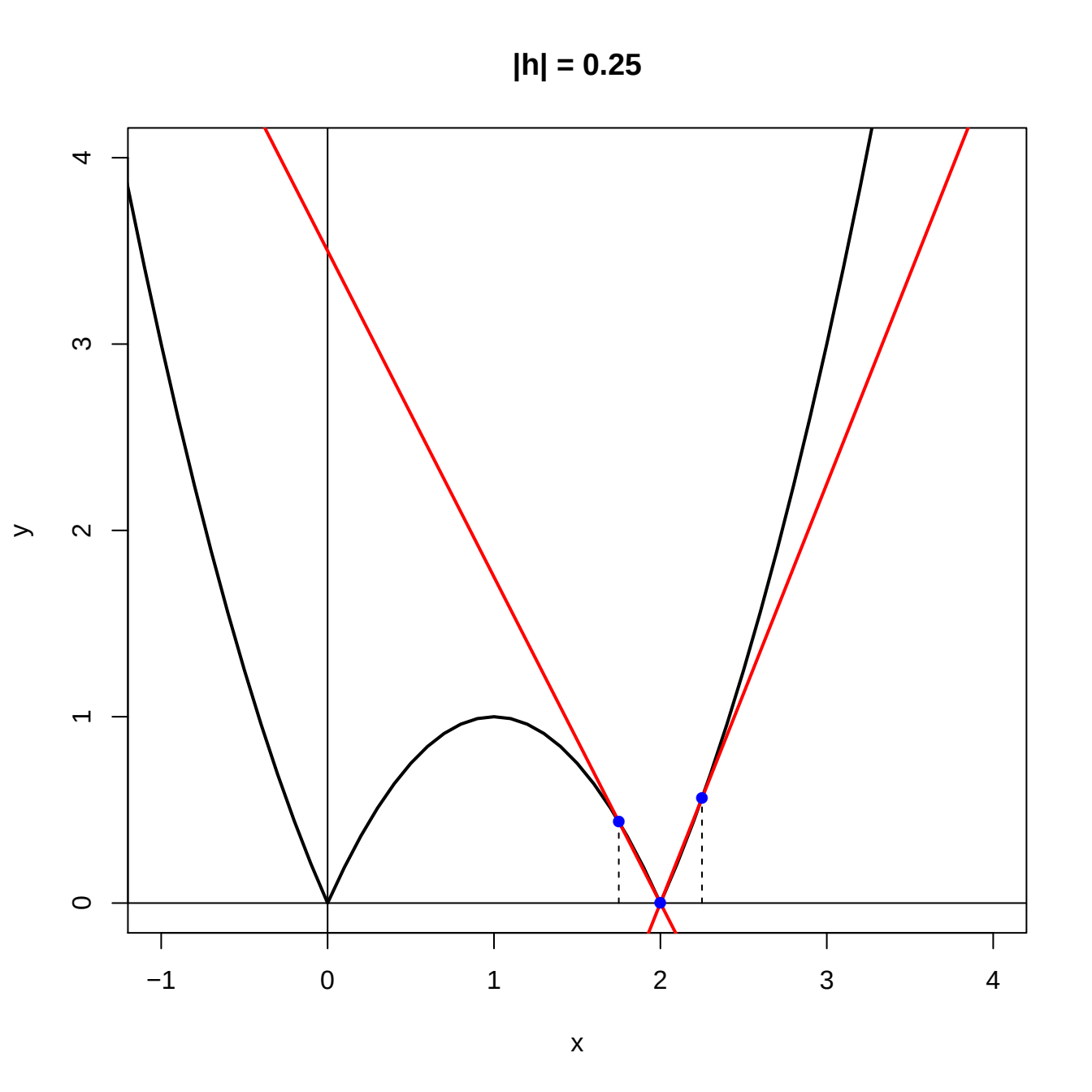
1
2
3
4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y
x
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1
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3
4
−1
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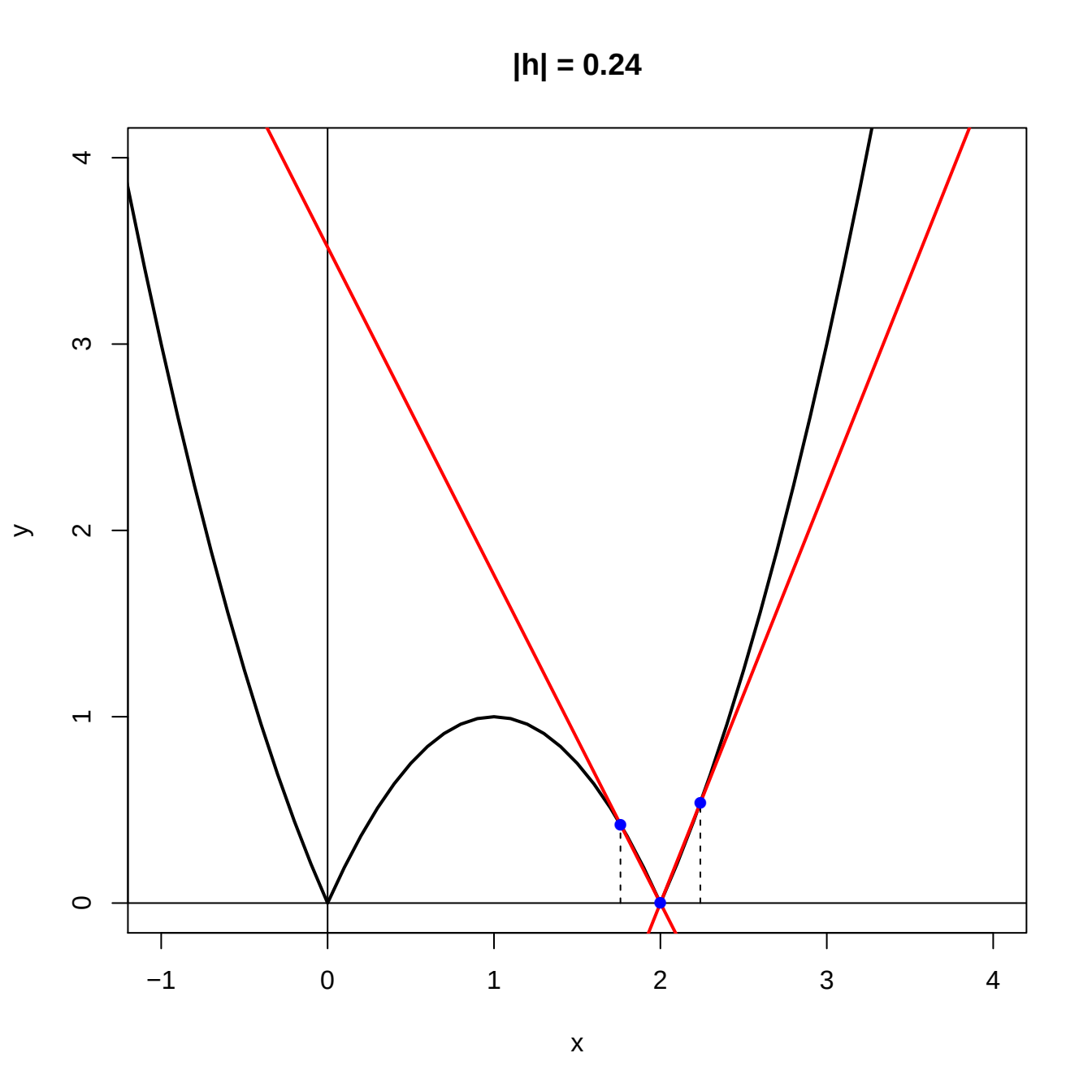
1
2
3
4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x
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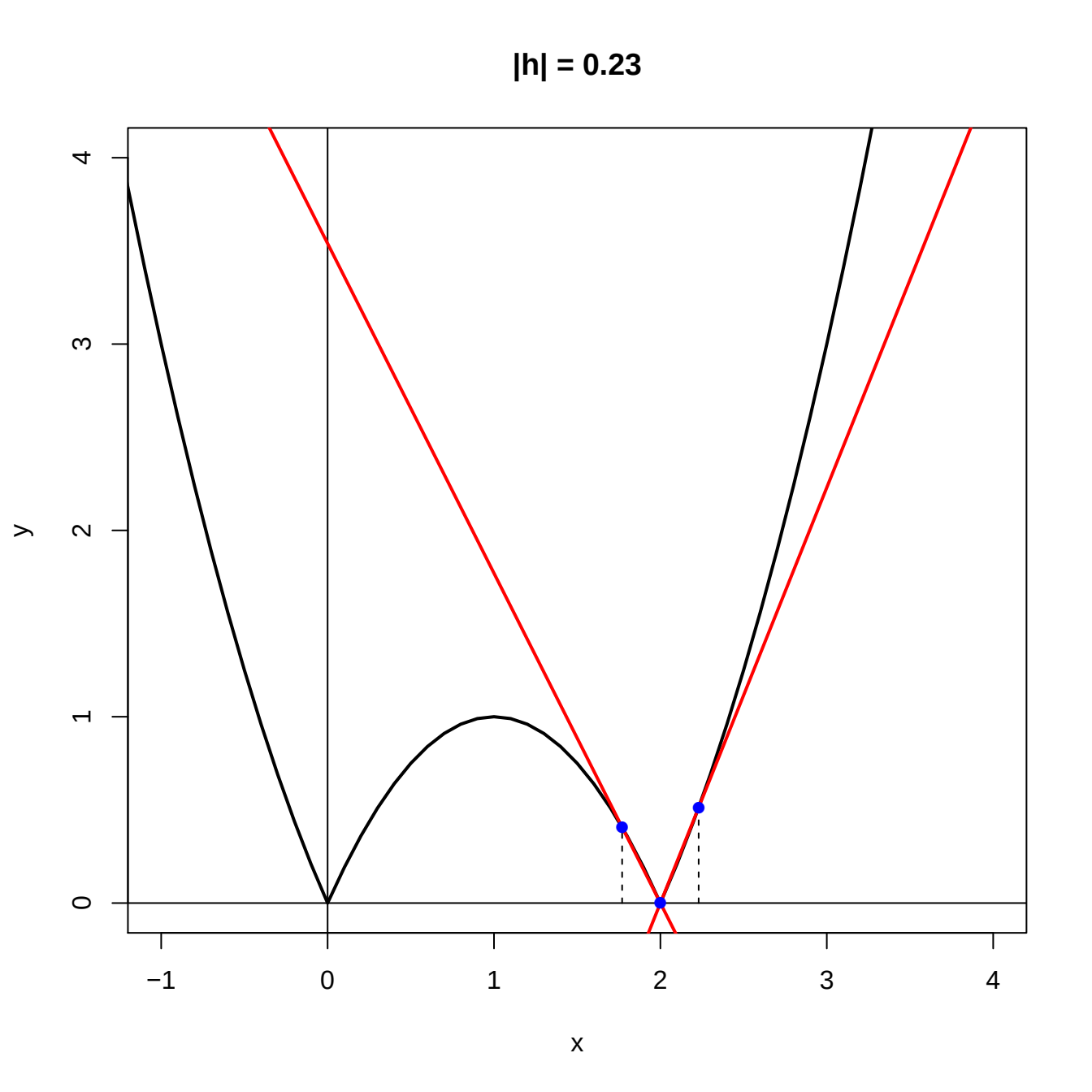
1
2
3
4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y
x
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1
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4
−1
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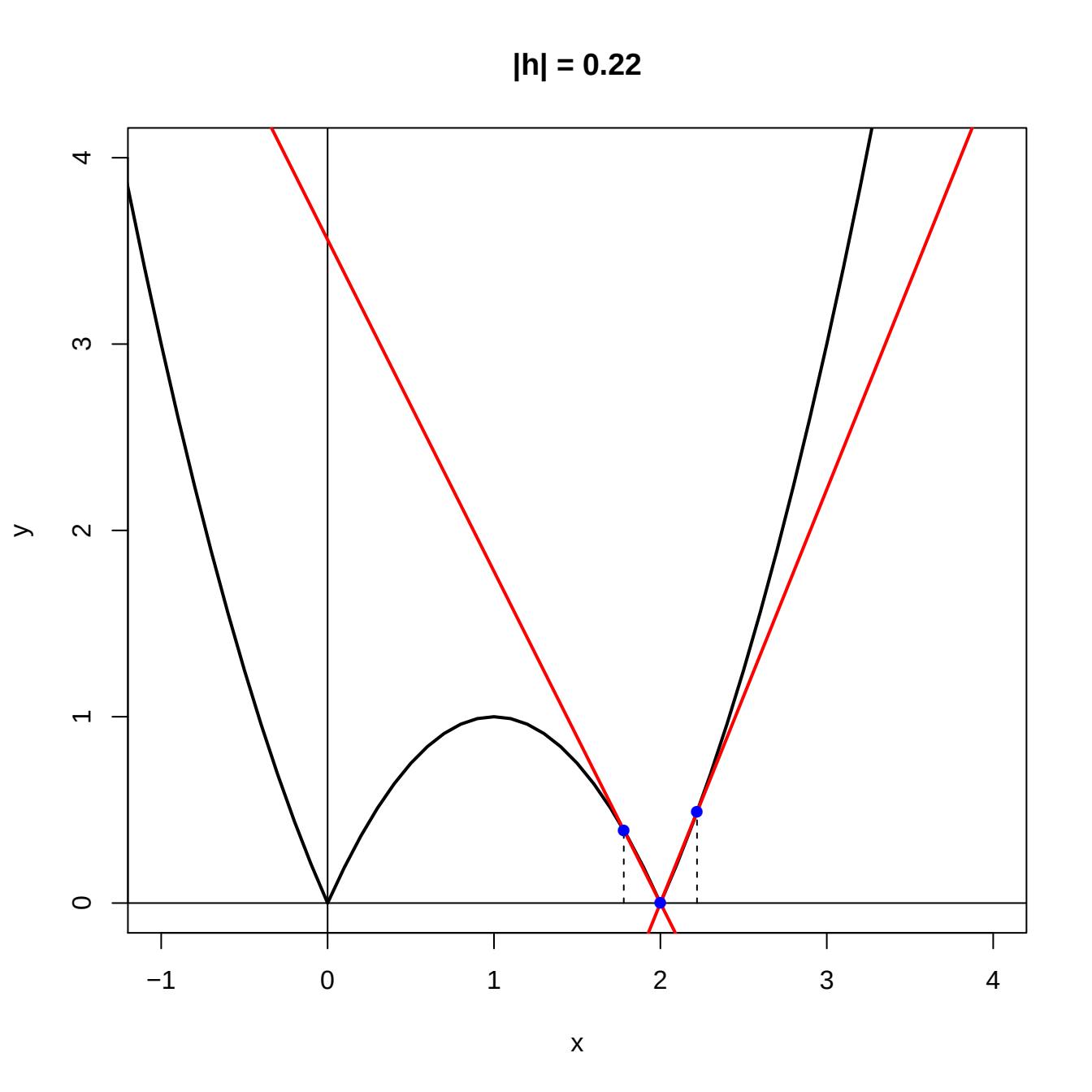
1
2
3
4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y
x
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3
4
−1
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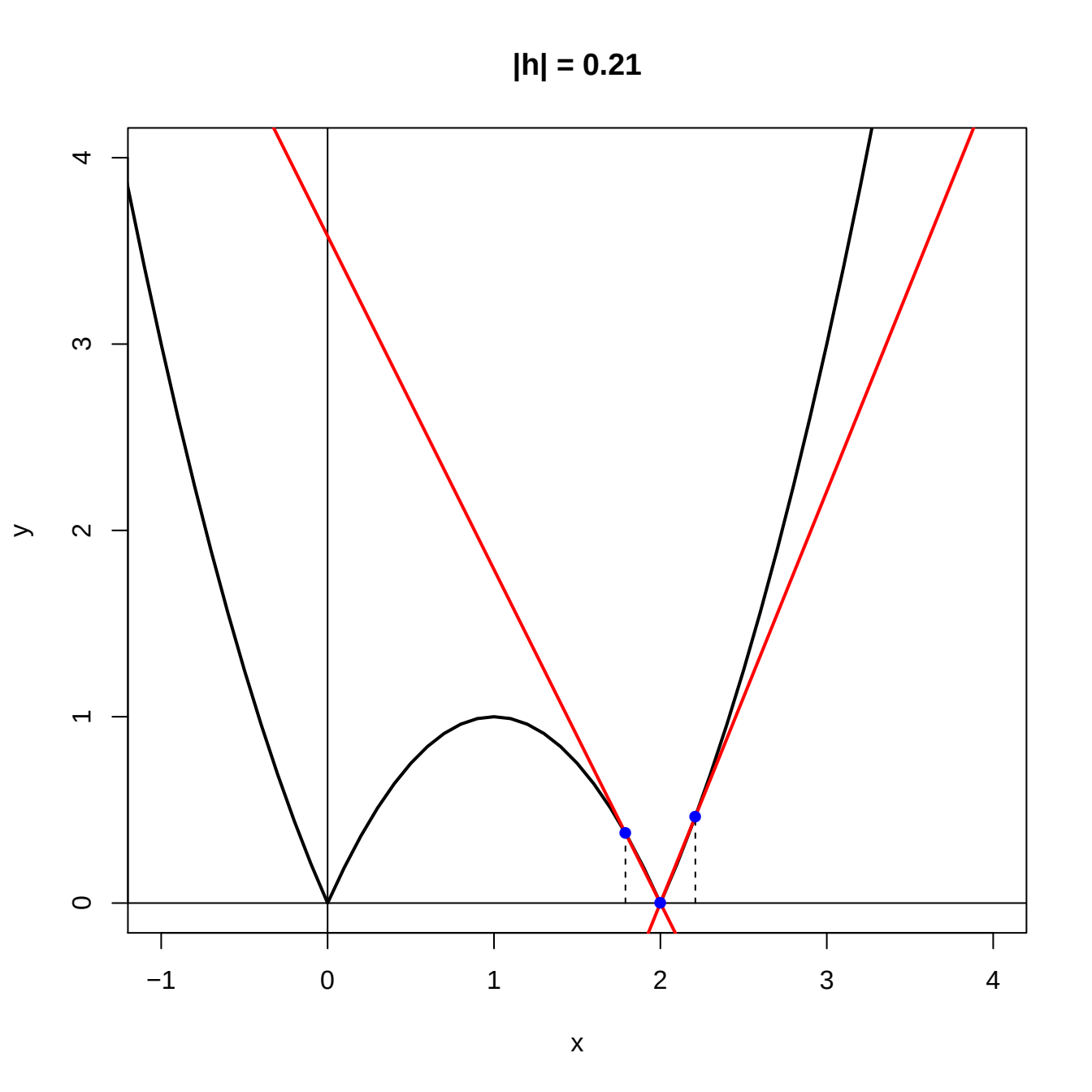
1
2
3
4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x
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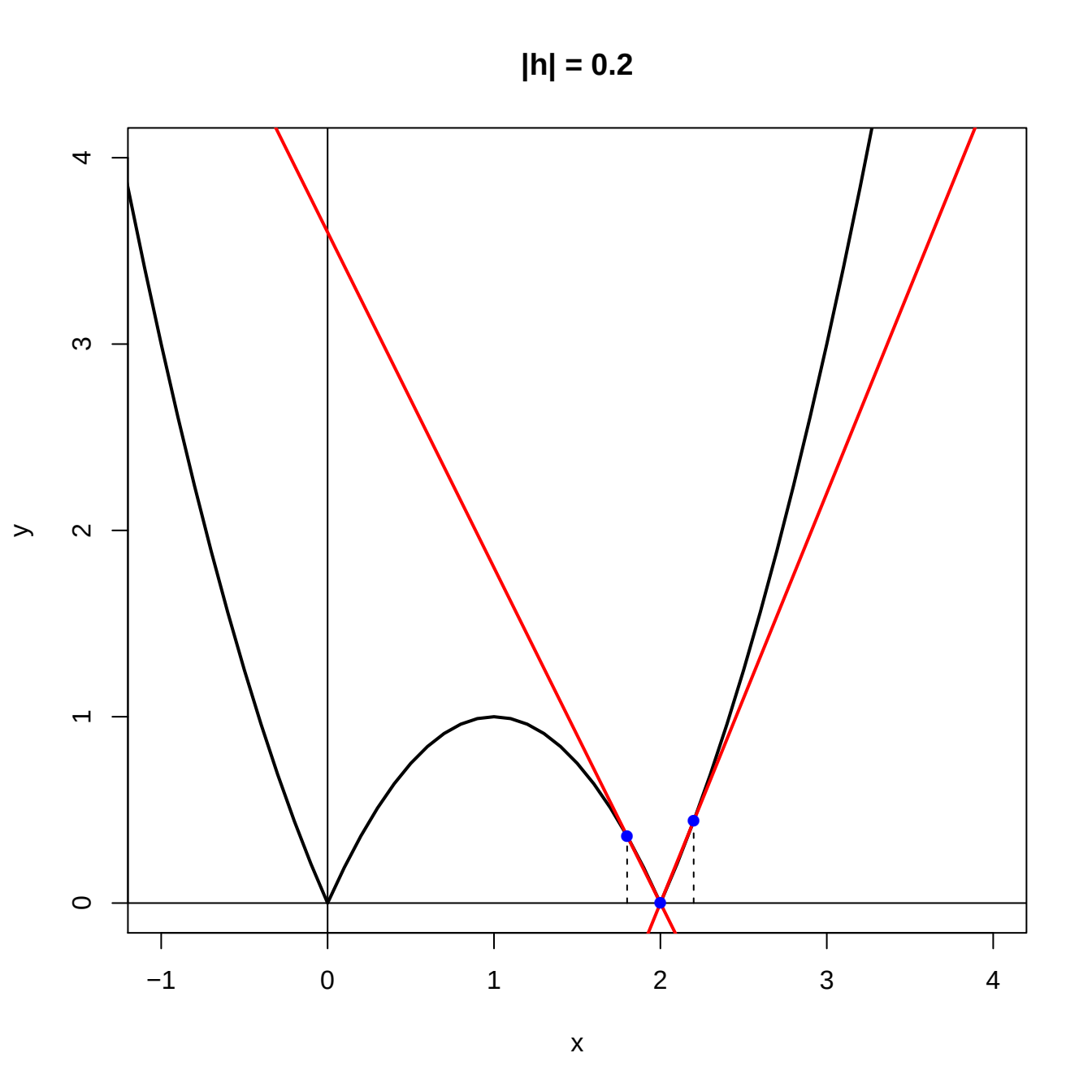
1
2
3
4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y
x
0
1
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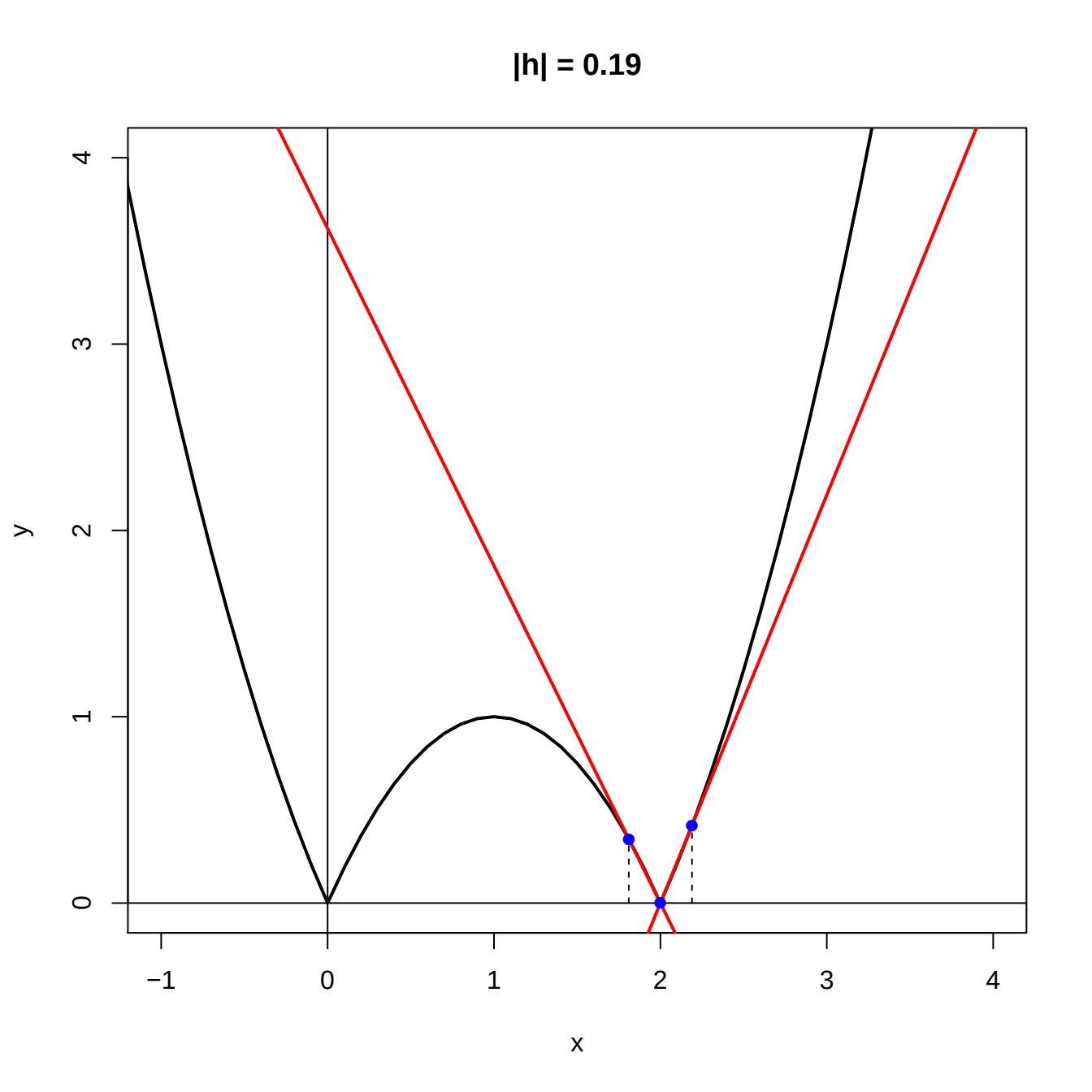
3
4
−1
0
1
2
3
4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y
x
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1
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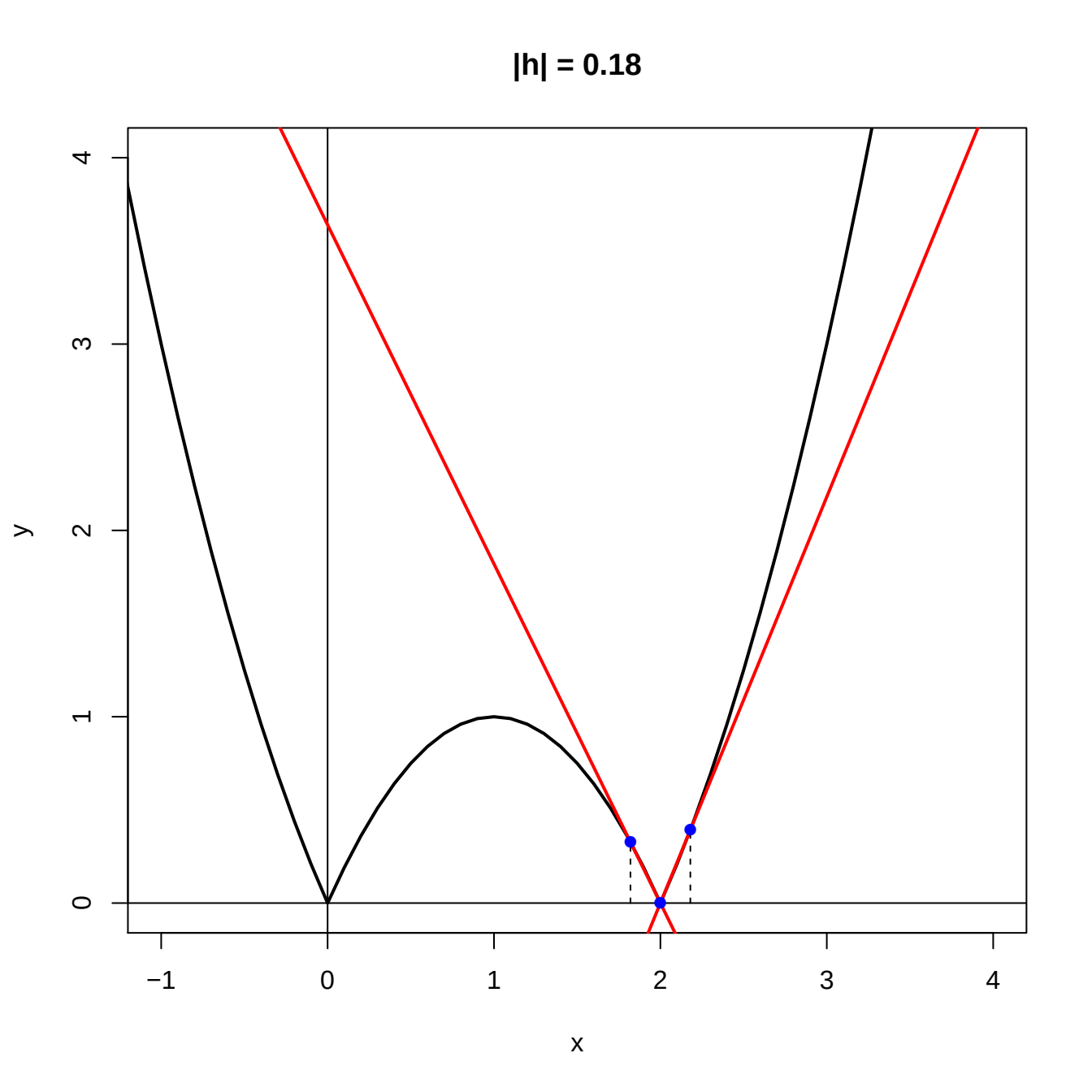
−1
0
1
2
3
4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x
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1
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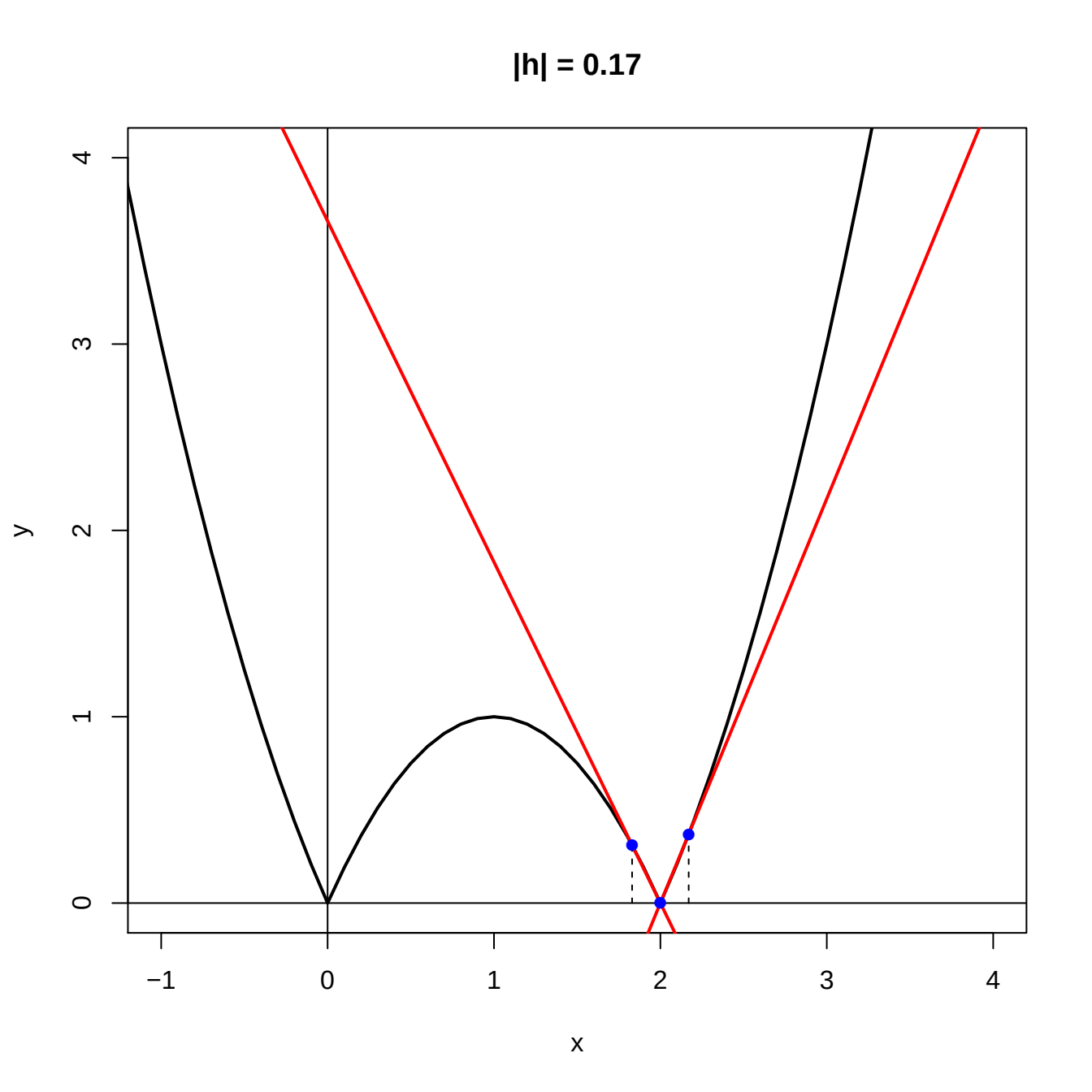
1
2
3
4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y
x
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1
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3
4
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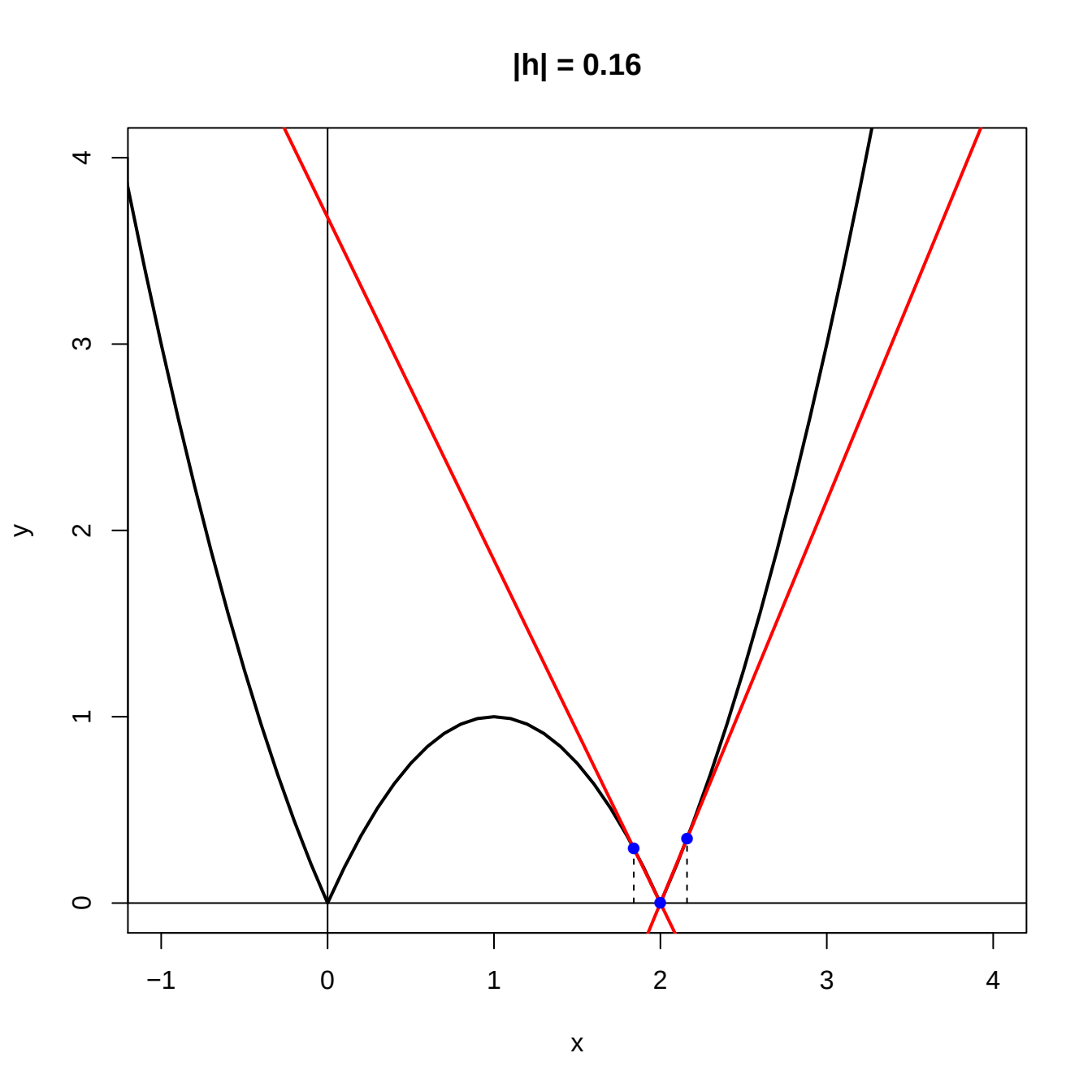
1
2
3
4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x
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3
4
−1
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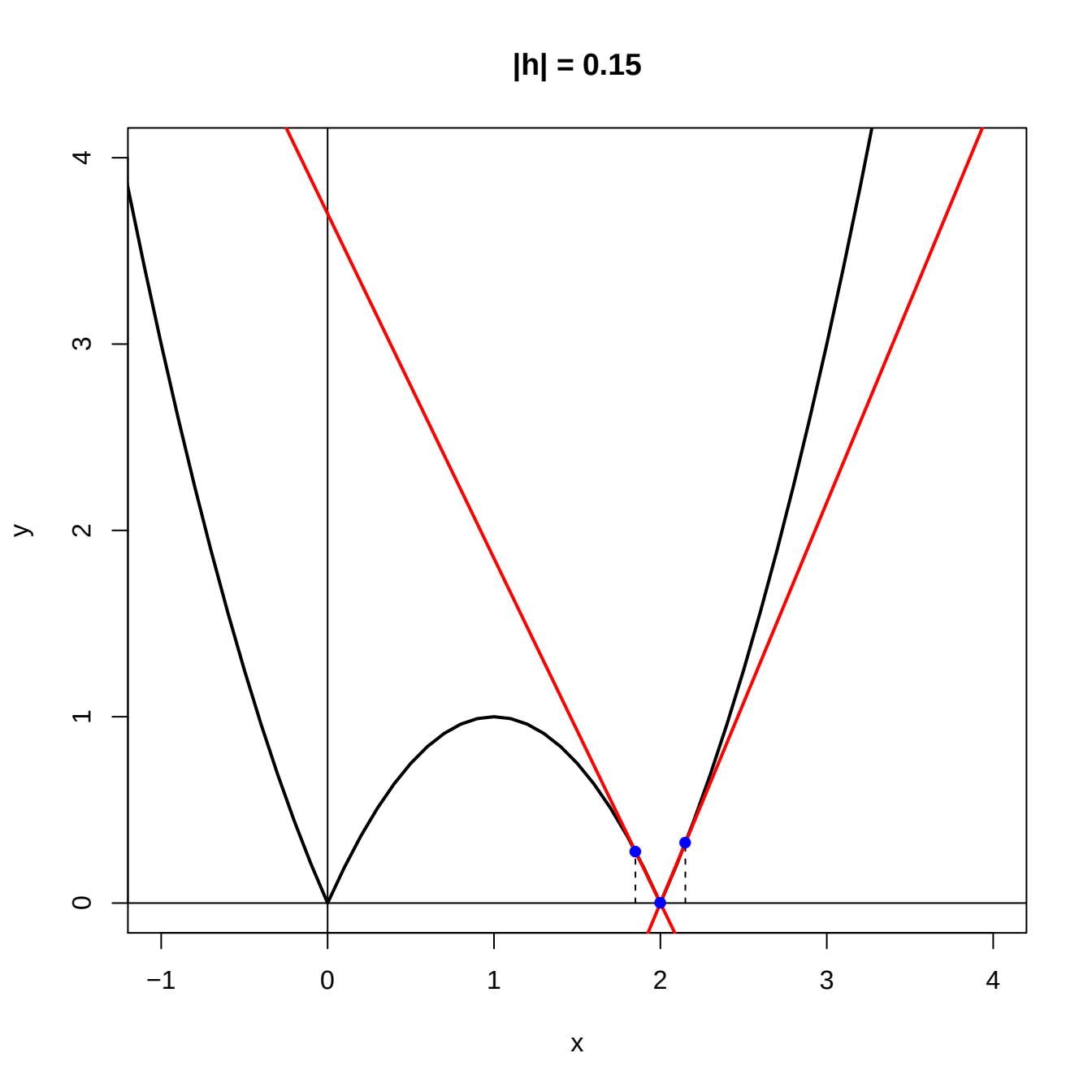
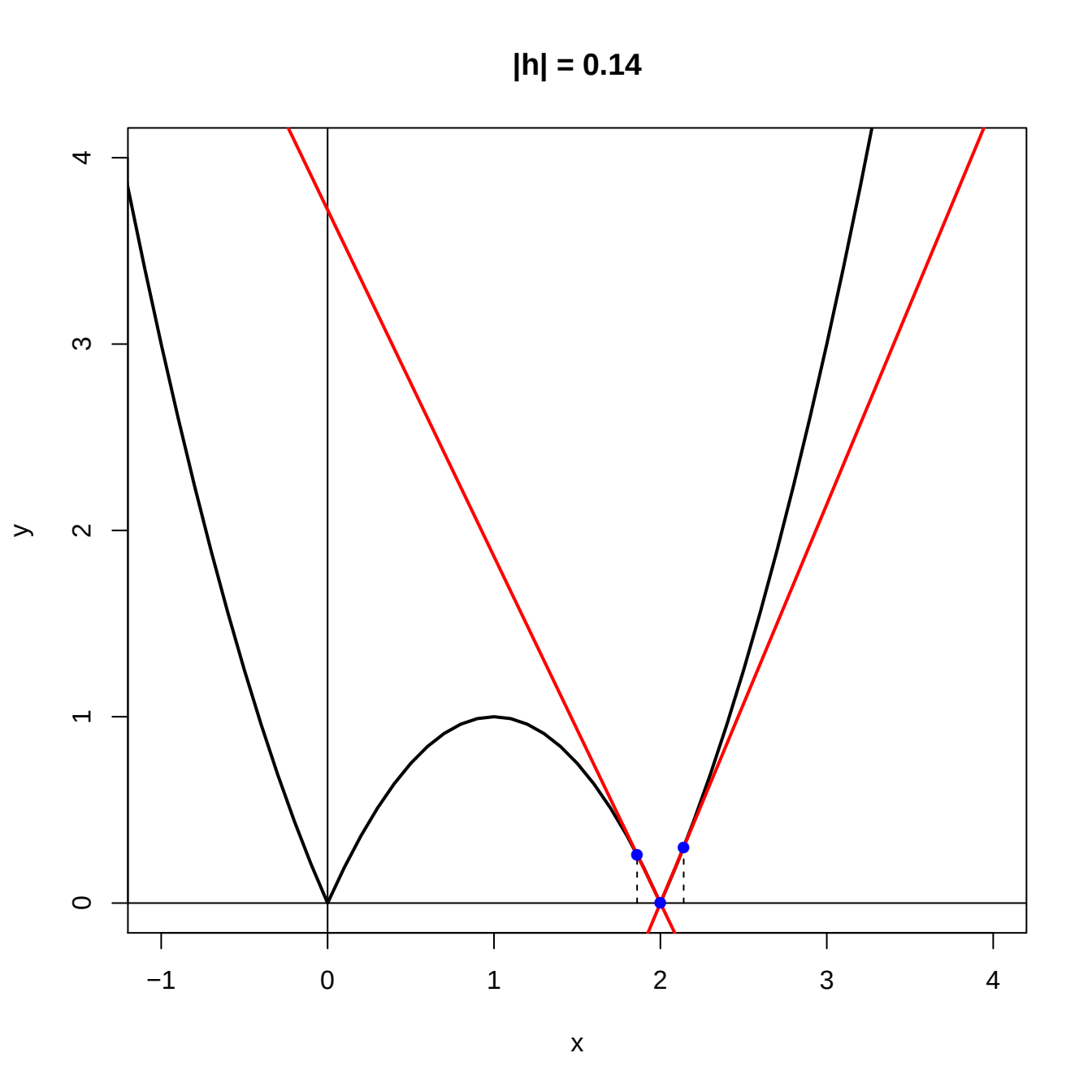
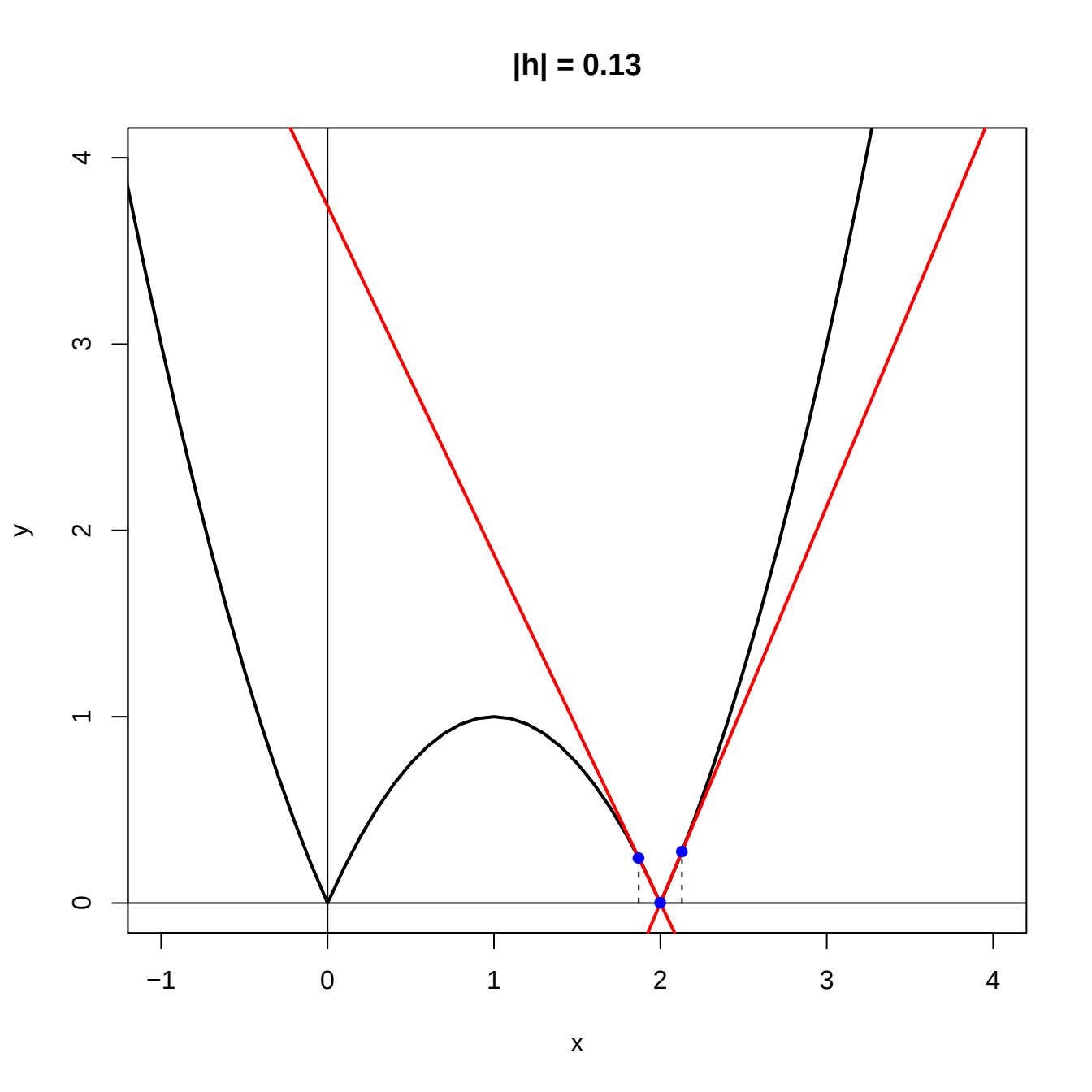
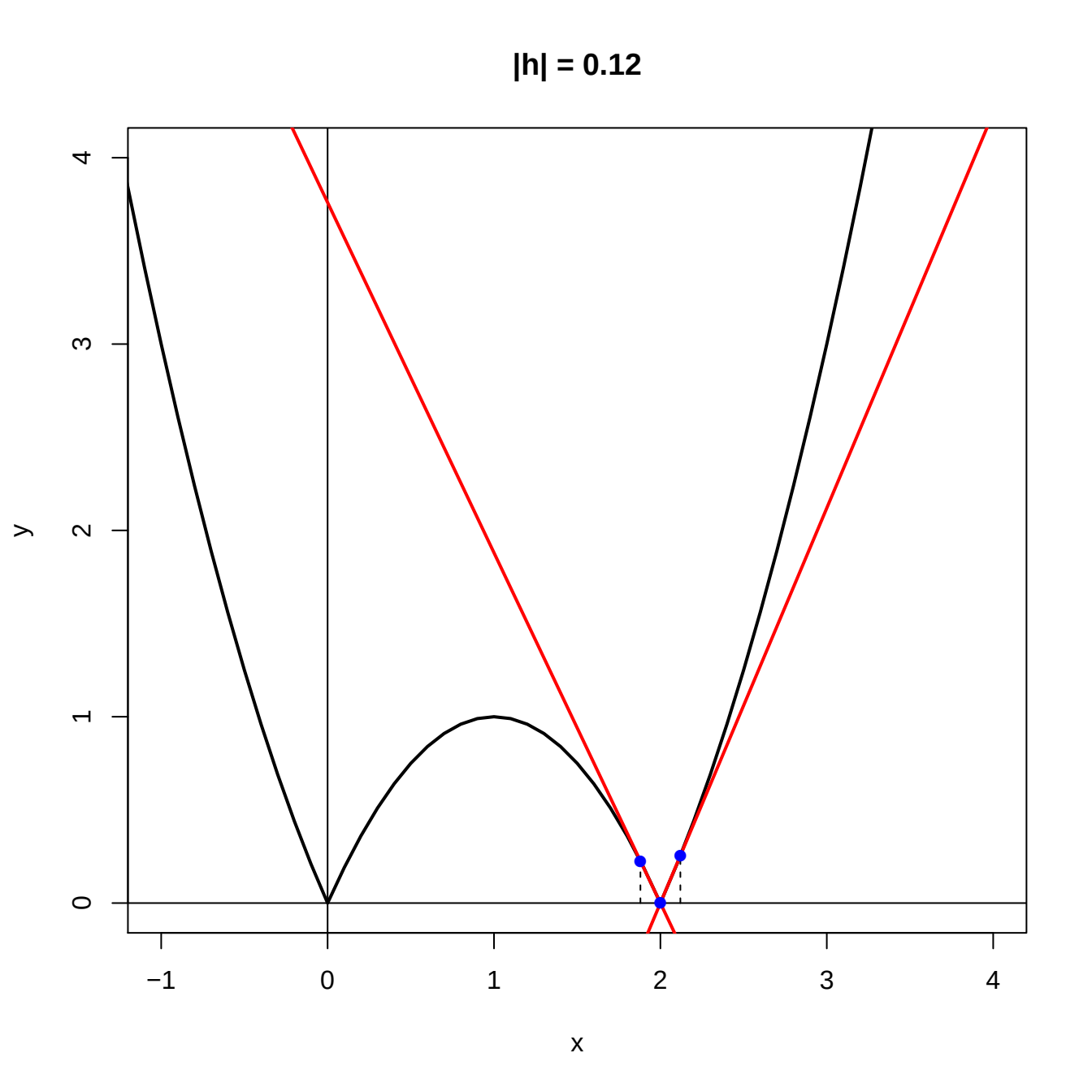
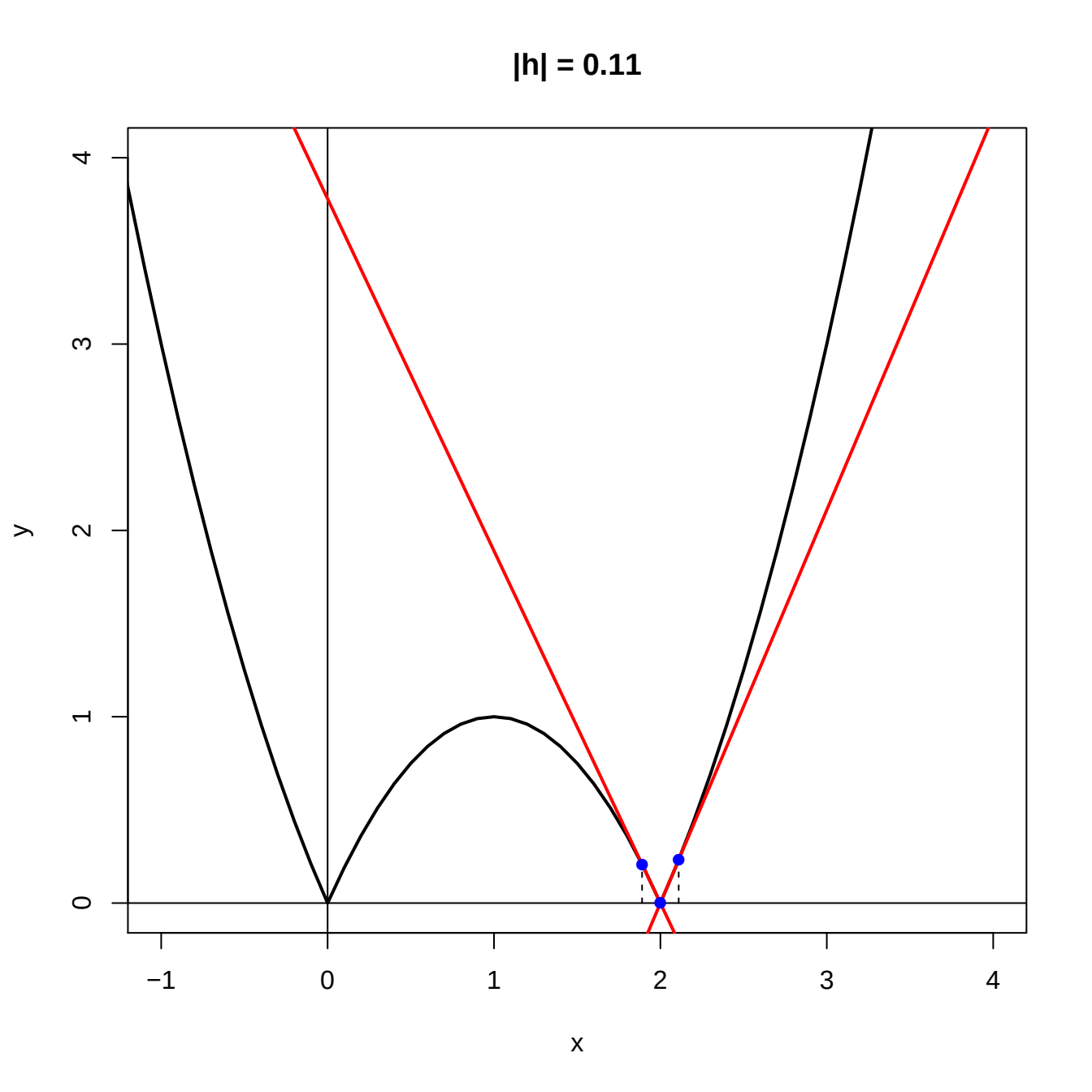
1
2
3
4

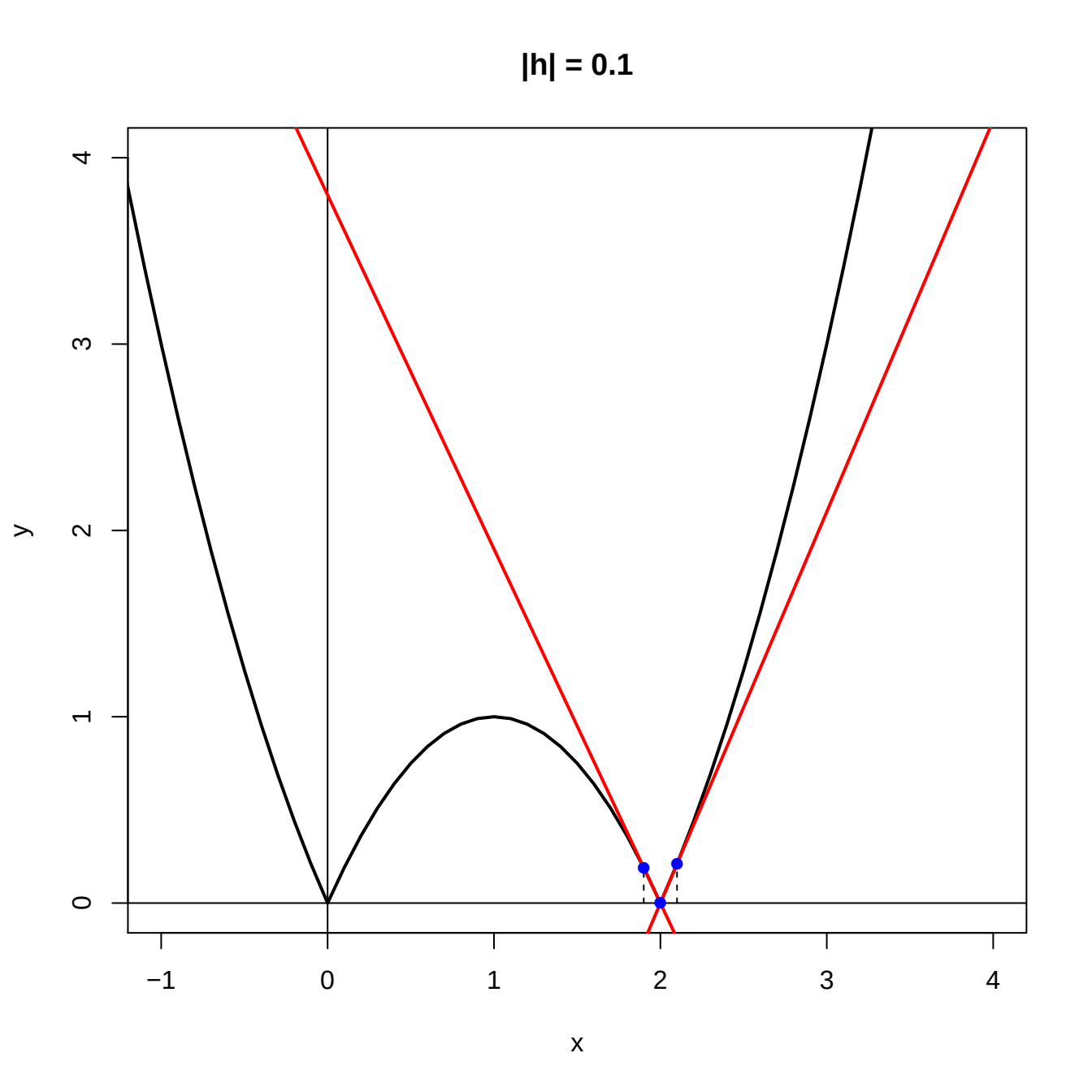

|h| = 0.15
y
x
0
1
2
3
4
−1
0
1
2
3
4

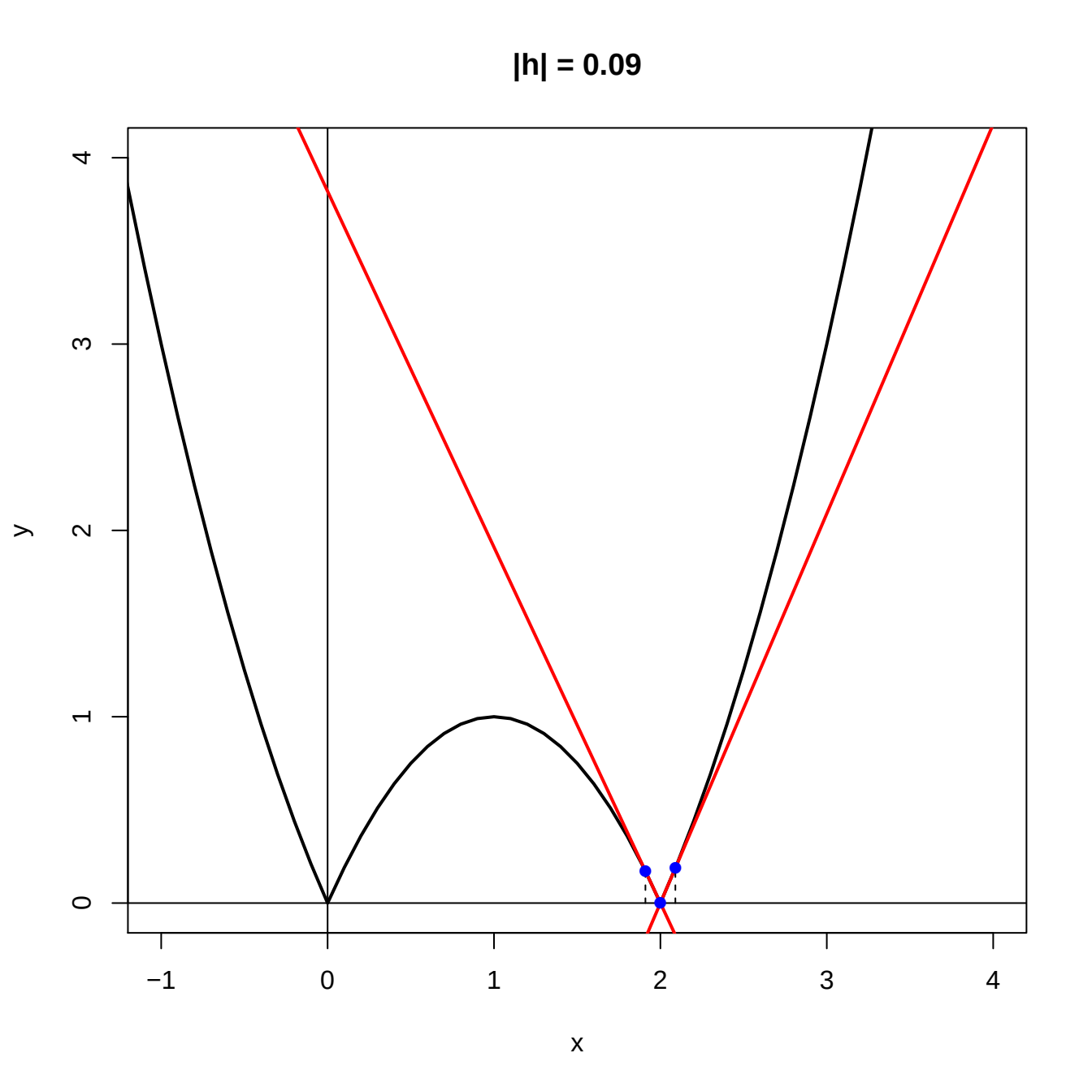

|h| = 0.14
y
x
0
1
2
3
4
−1
0
1
2
3
4

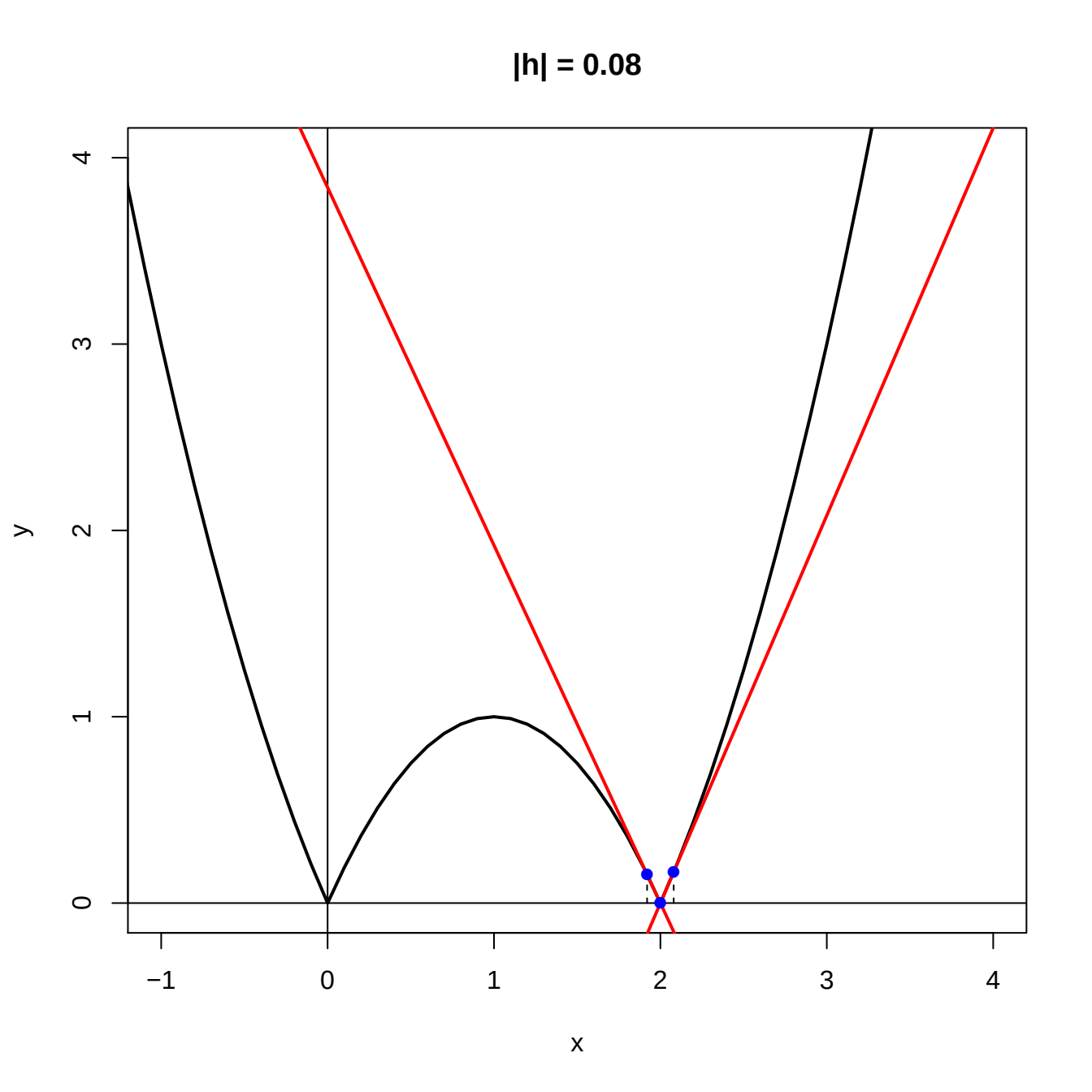

|h| = 0.13
y
x
0
1
2
3
4
−1
0
1
2
3
4

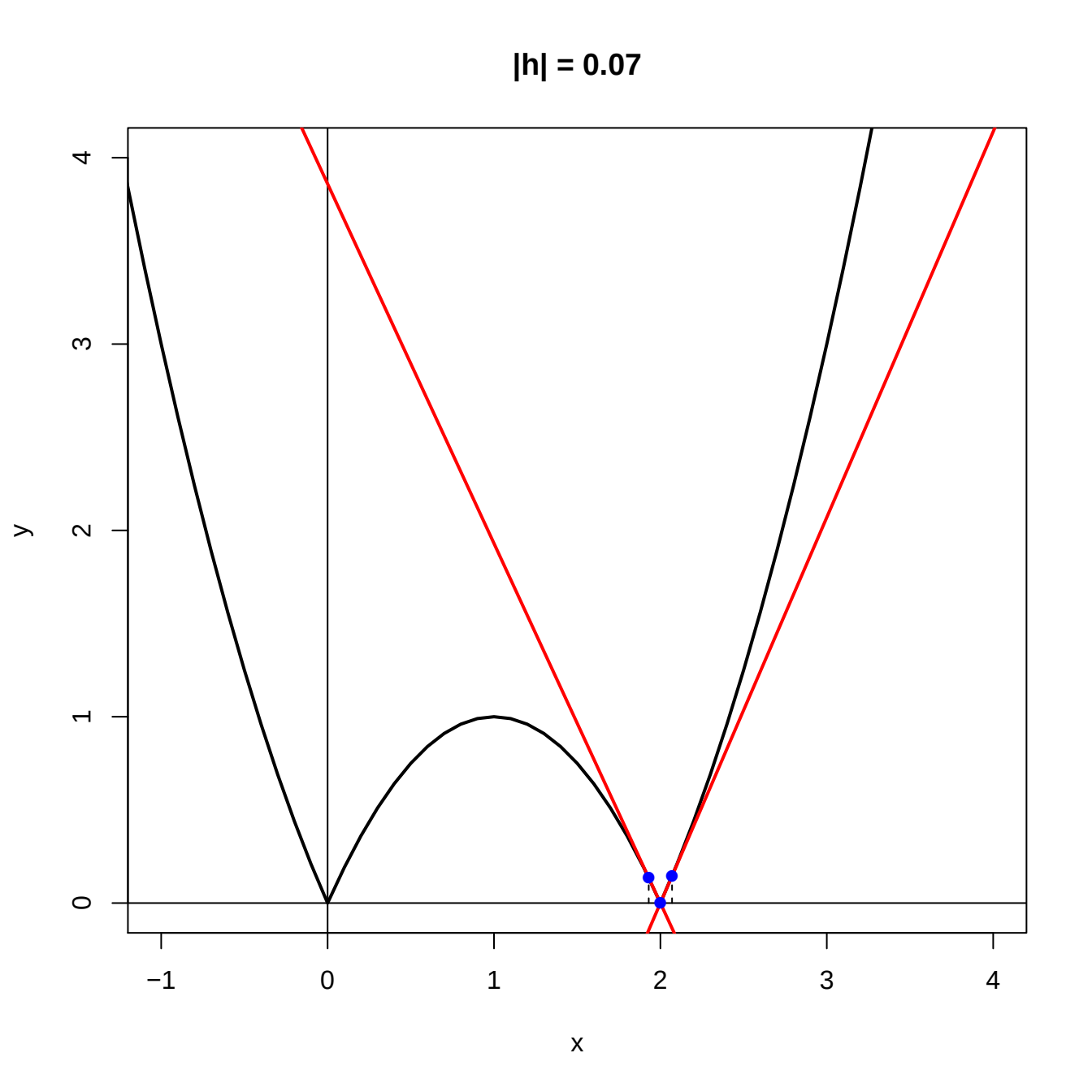

|h| = 0.12
y
x
0
1
2
3
4
−1
0
1
2
3
4

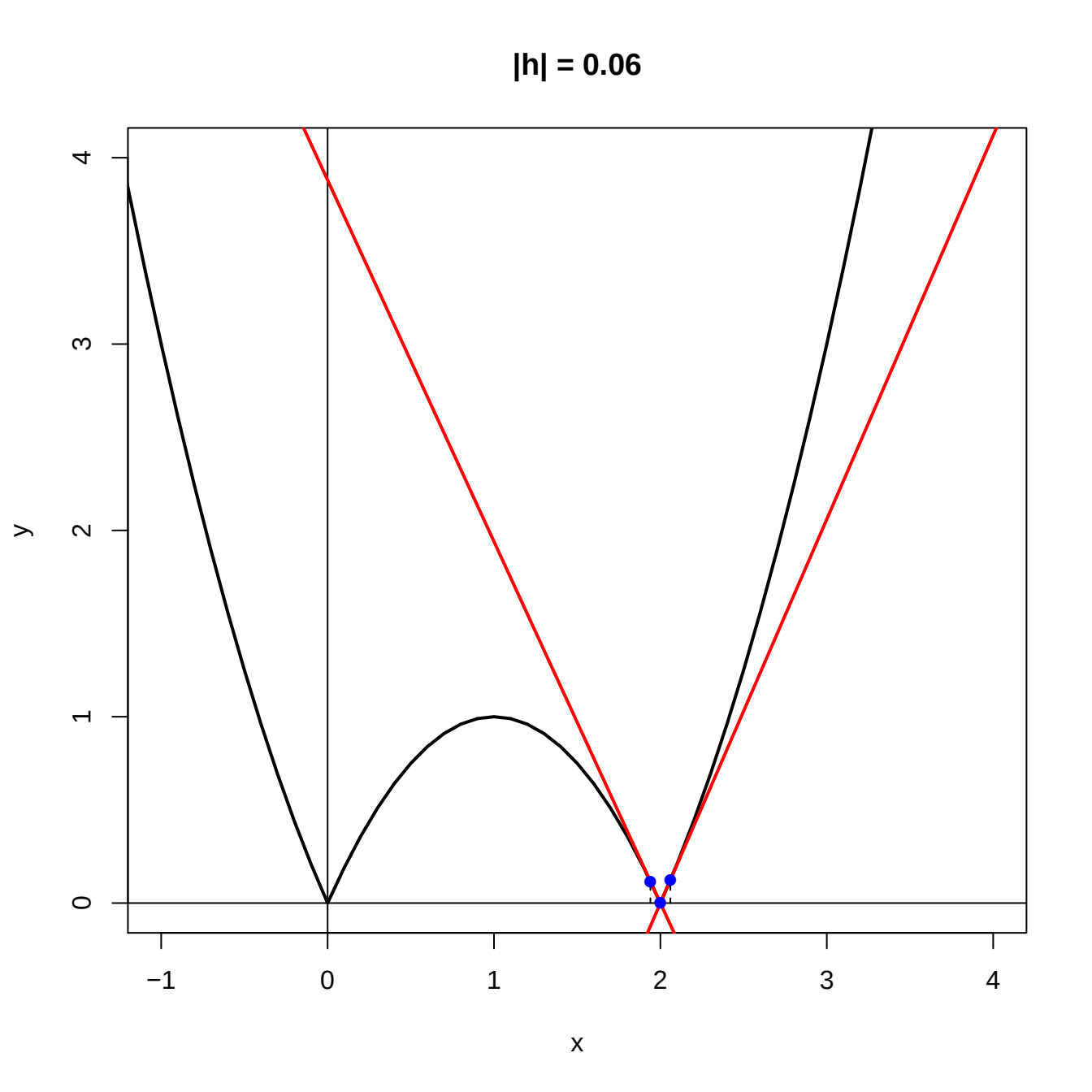

|h| = 0.11
y
x
0
1
2
3
4
−1
0
1
2
3
4

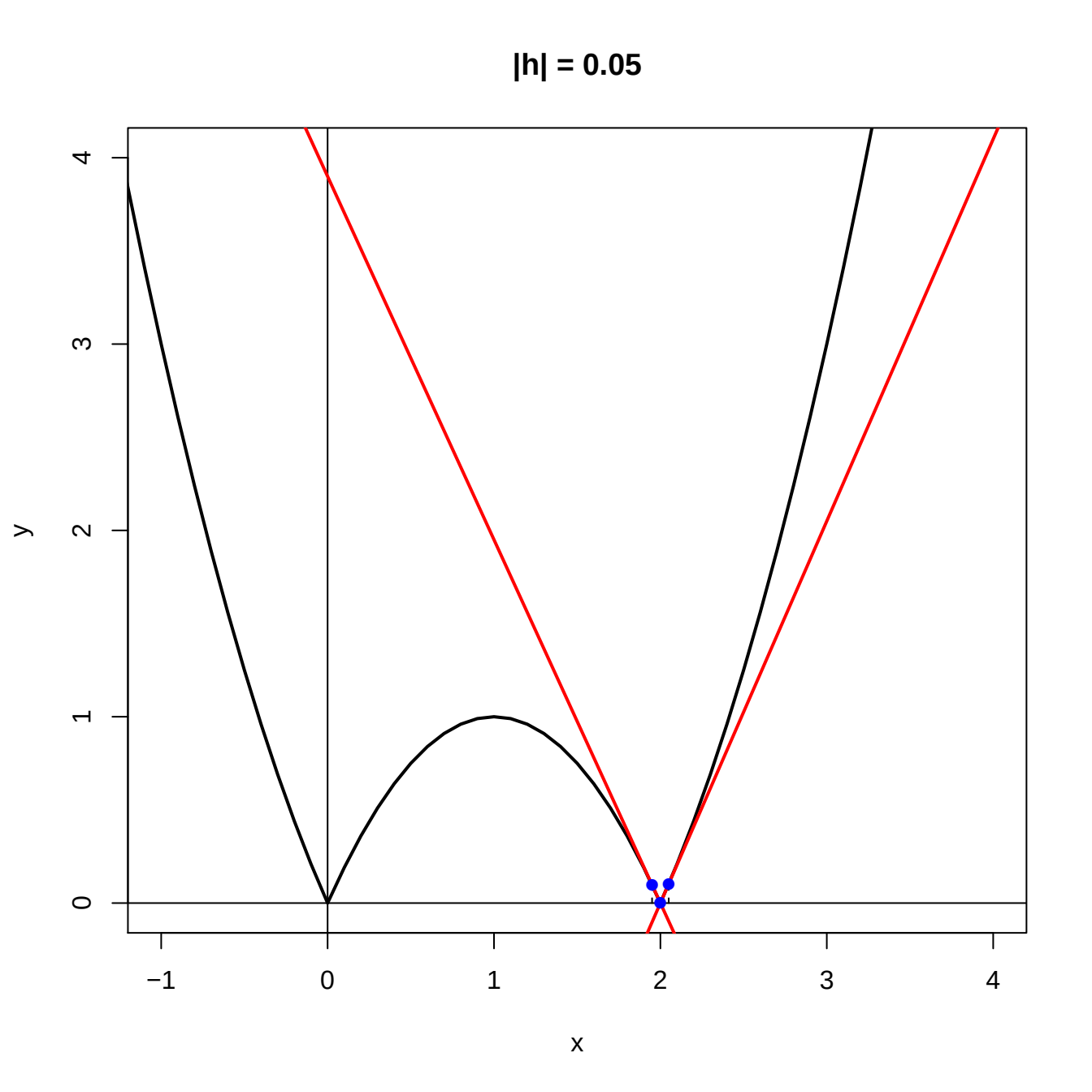

|h| = 0.1
y
x
0
1
2
3
4
−1
0
1
2
3
4

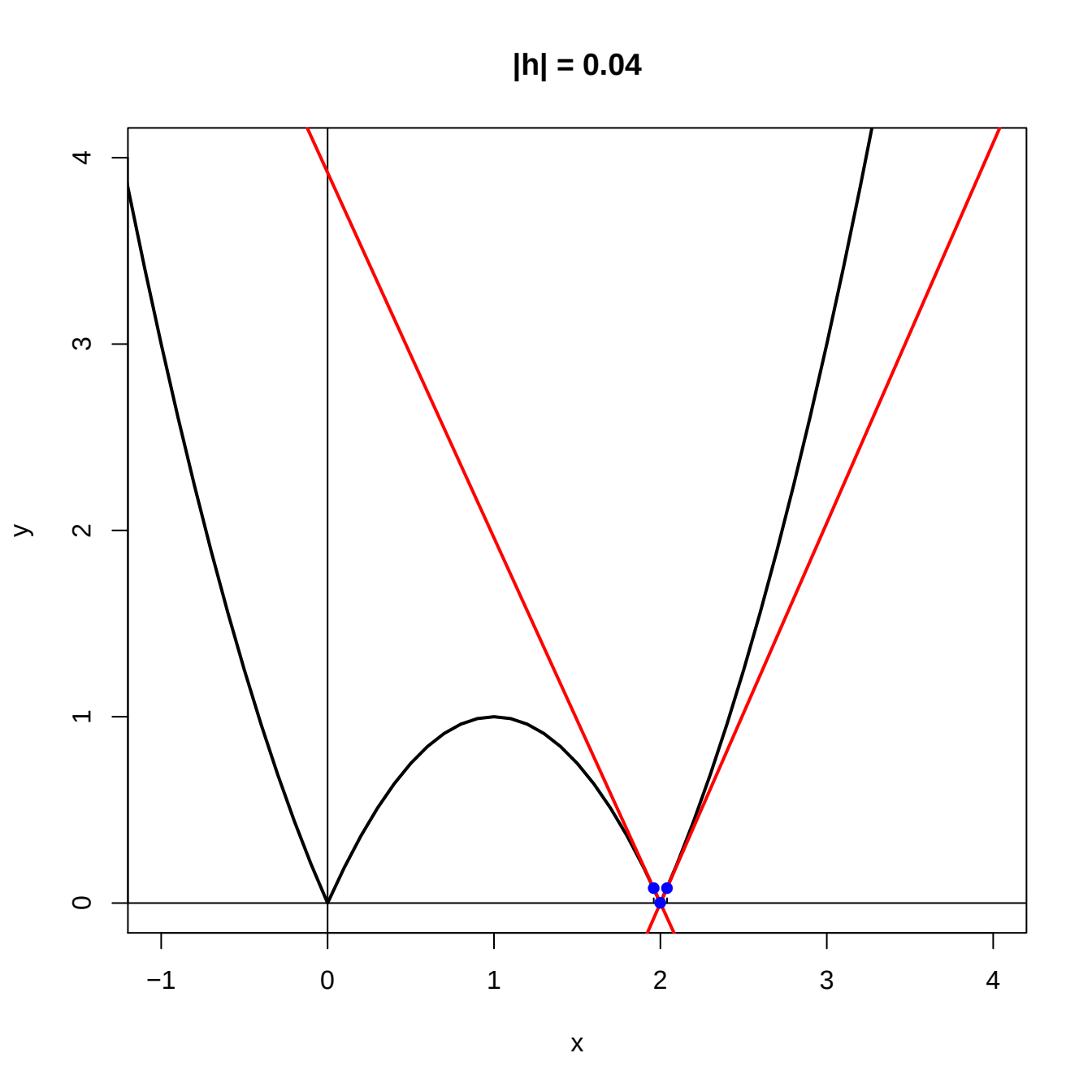

|h| = 0.09
y
x
0
1
2
3
4
−1
0
1
2
3
4

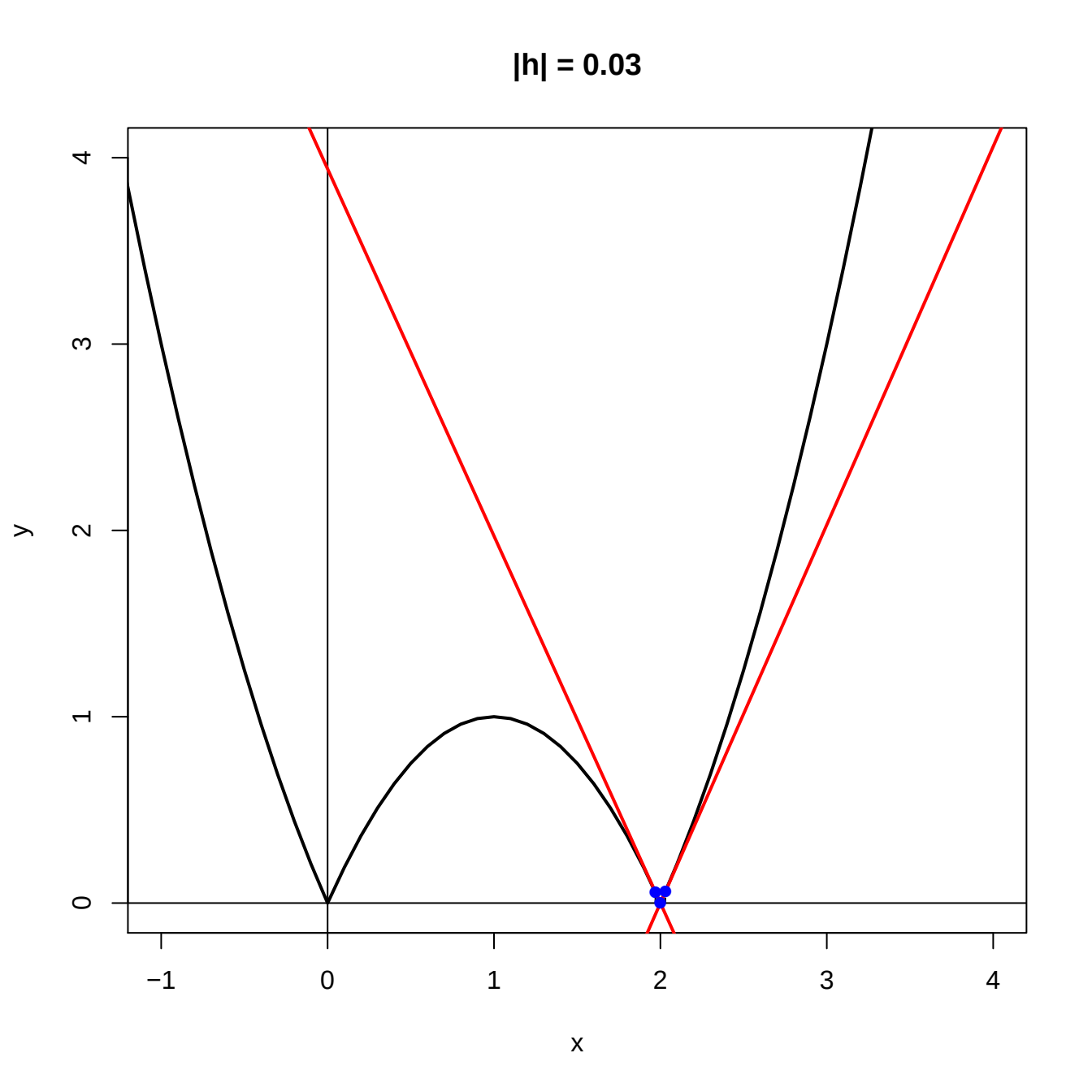

|h| = 0.08
y
x
0
1
2
3
4
−1
0
1
2
3
4

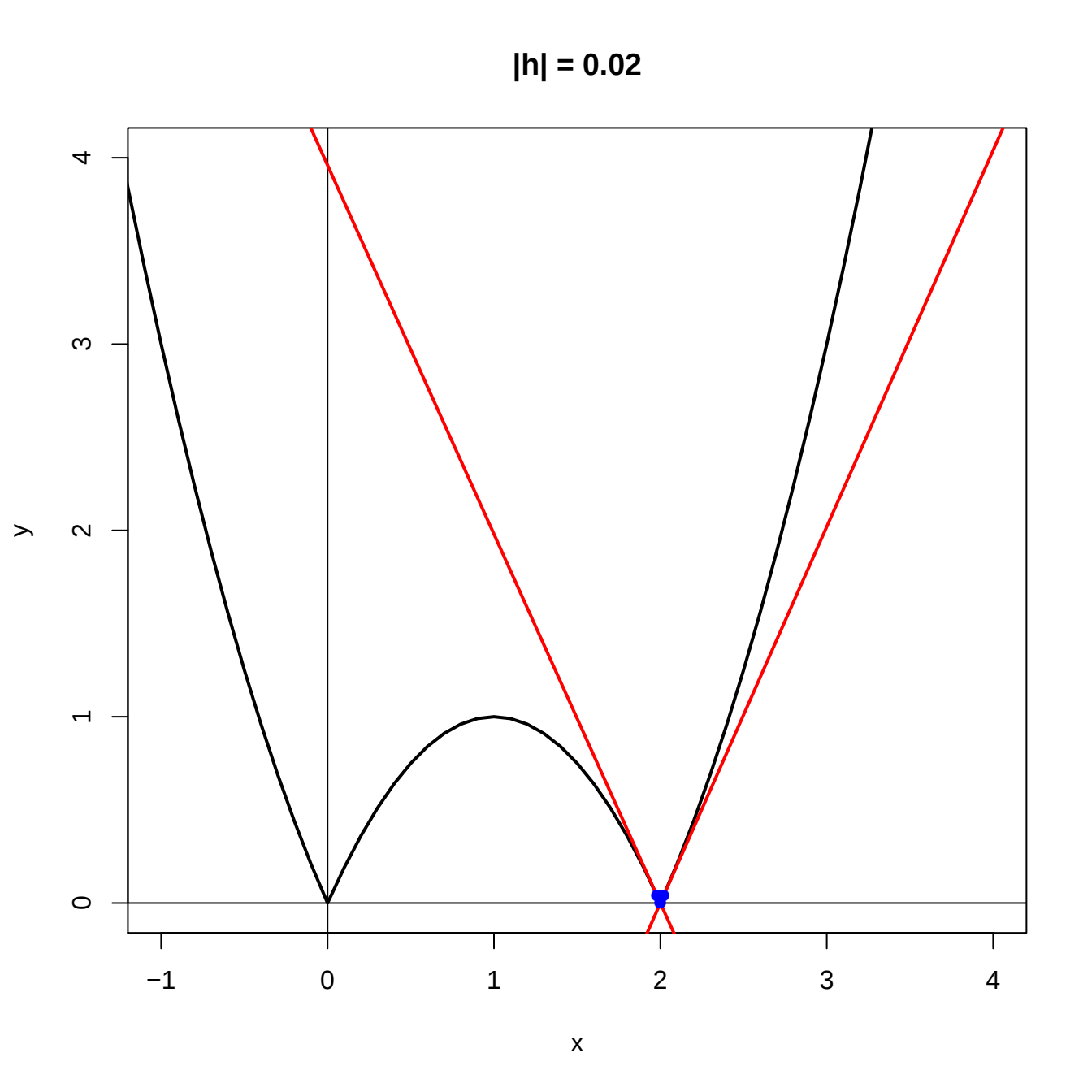

|h| = 0.07
y
x
0
1
2
3
4
−1
0
1
2
3
4

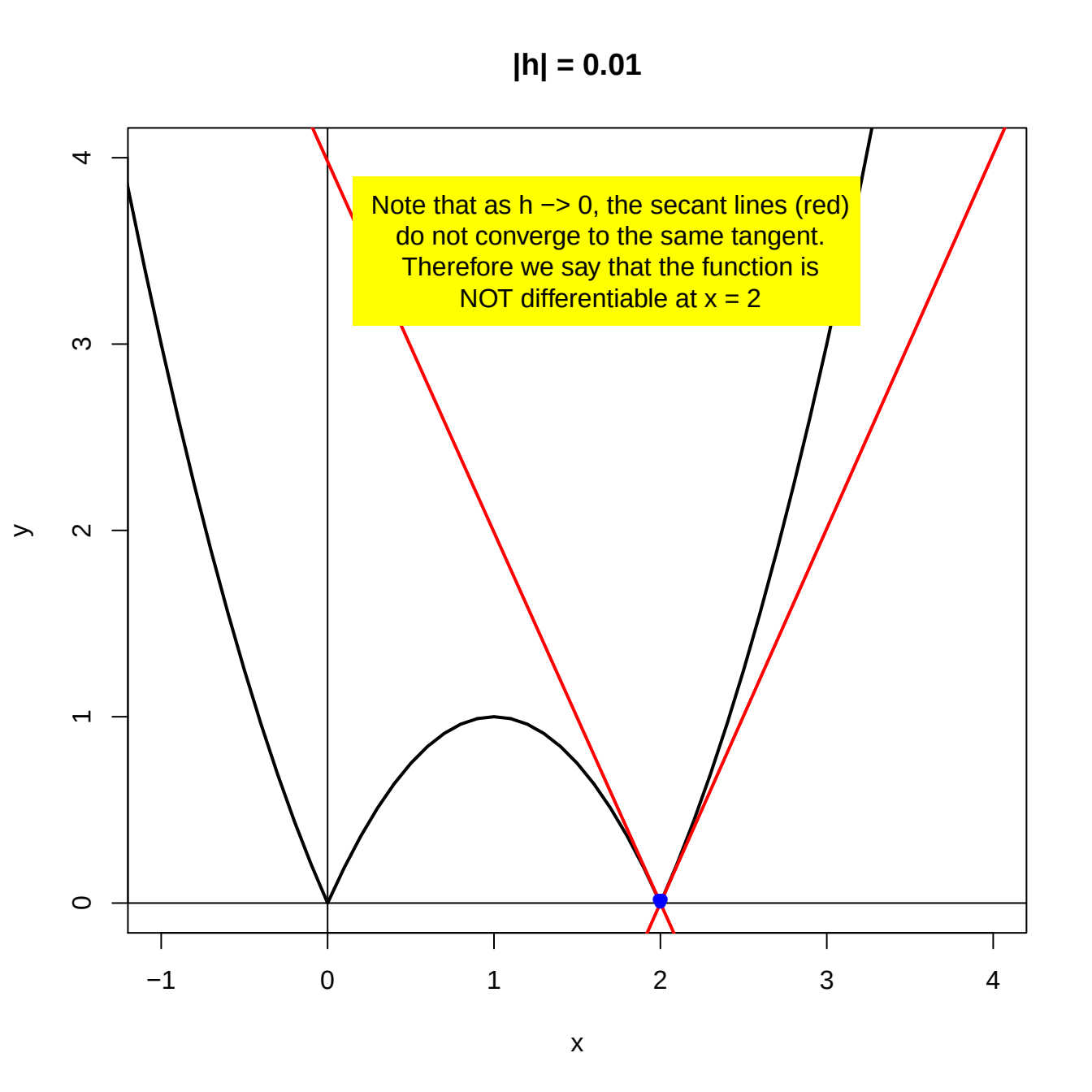

|h| = 0.06
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.05
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.04
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.03
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.02
y
x
0
1
2
3
4
−1
0
1
2
3
4


|h| = 0.01
Note that as h −> 0, the secant lines (red) do not converge to the same tangent. Therefore we say that the function is NOT differentiable at x = 2
y
x
0
1
2
3
4
−1
0
1
2
3
4