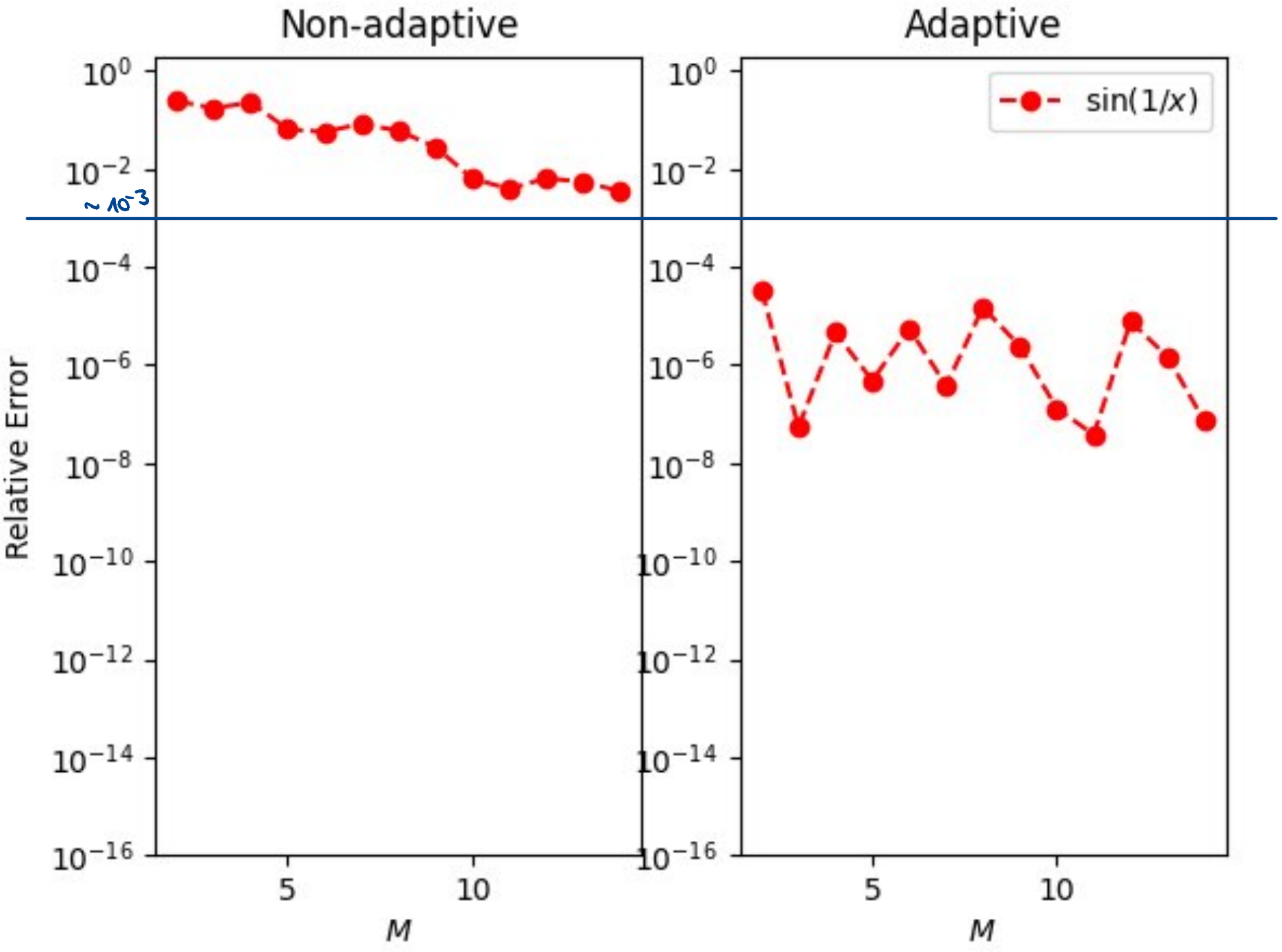
Lab 11 - 16th Nov 2023, Lena Kellner

of intervals when ...

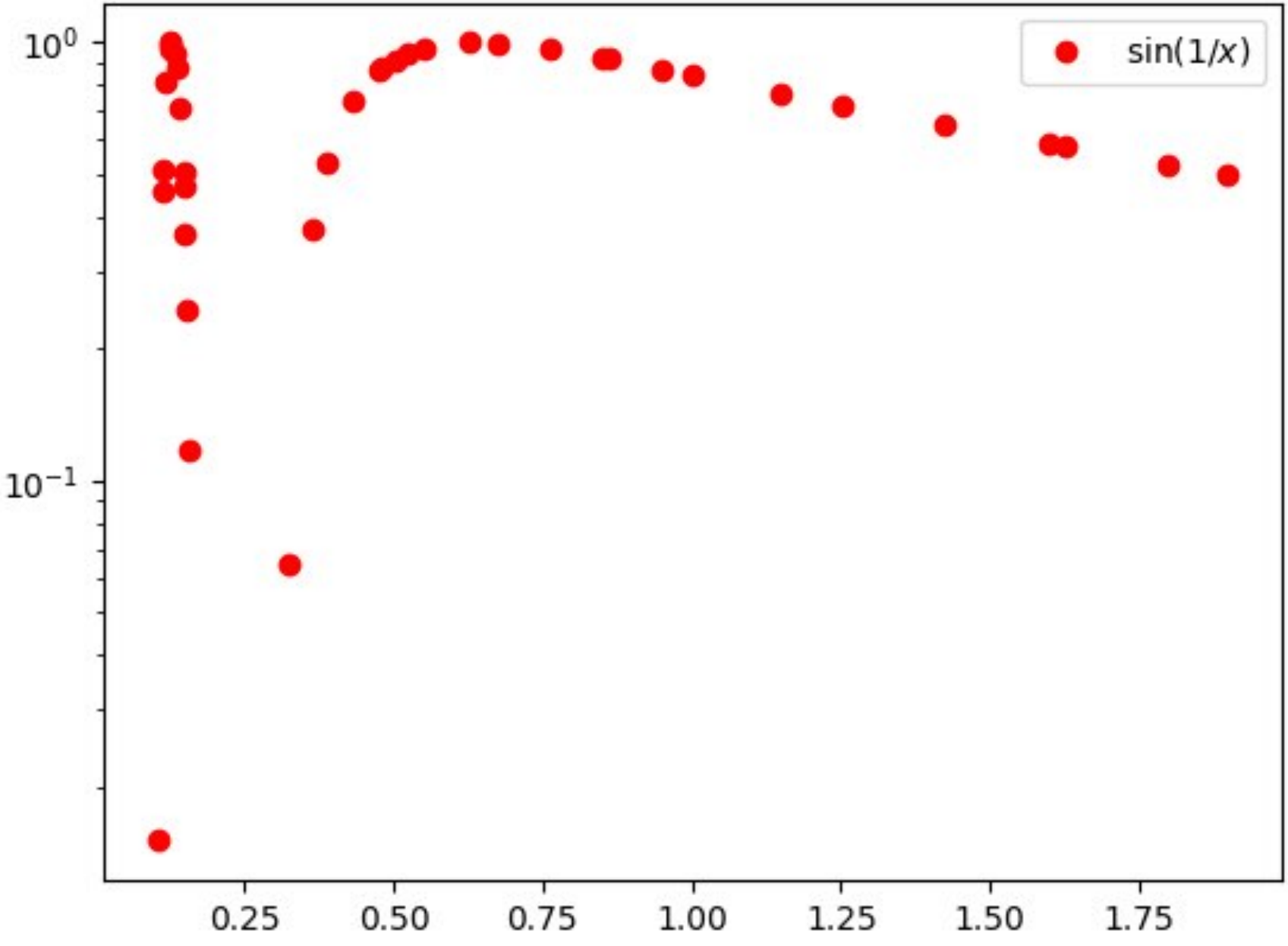
... non-adaptive	Gauss	reaches accuracy 10^{-3}:	Never (when $n \in \{1,\dots,13\}$)
... adaptive	Gauss	" "	: $\forall n \in \{1,\dots,13\}$
... non-adaptive	Simpsons	" "	: Never
... adaptive	Simpsons	" "	: Never
... non-adaptive	Trap	" "	: $\forall n \in \{6\}$
... adaptive	Trap	" "	: $\forall n \in \{2,\dots,13\} \setminus \{10\}$

⇒ The best choice is adaptive Gauss method !

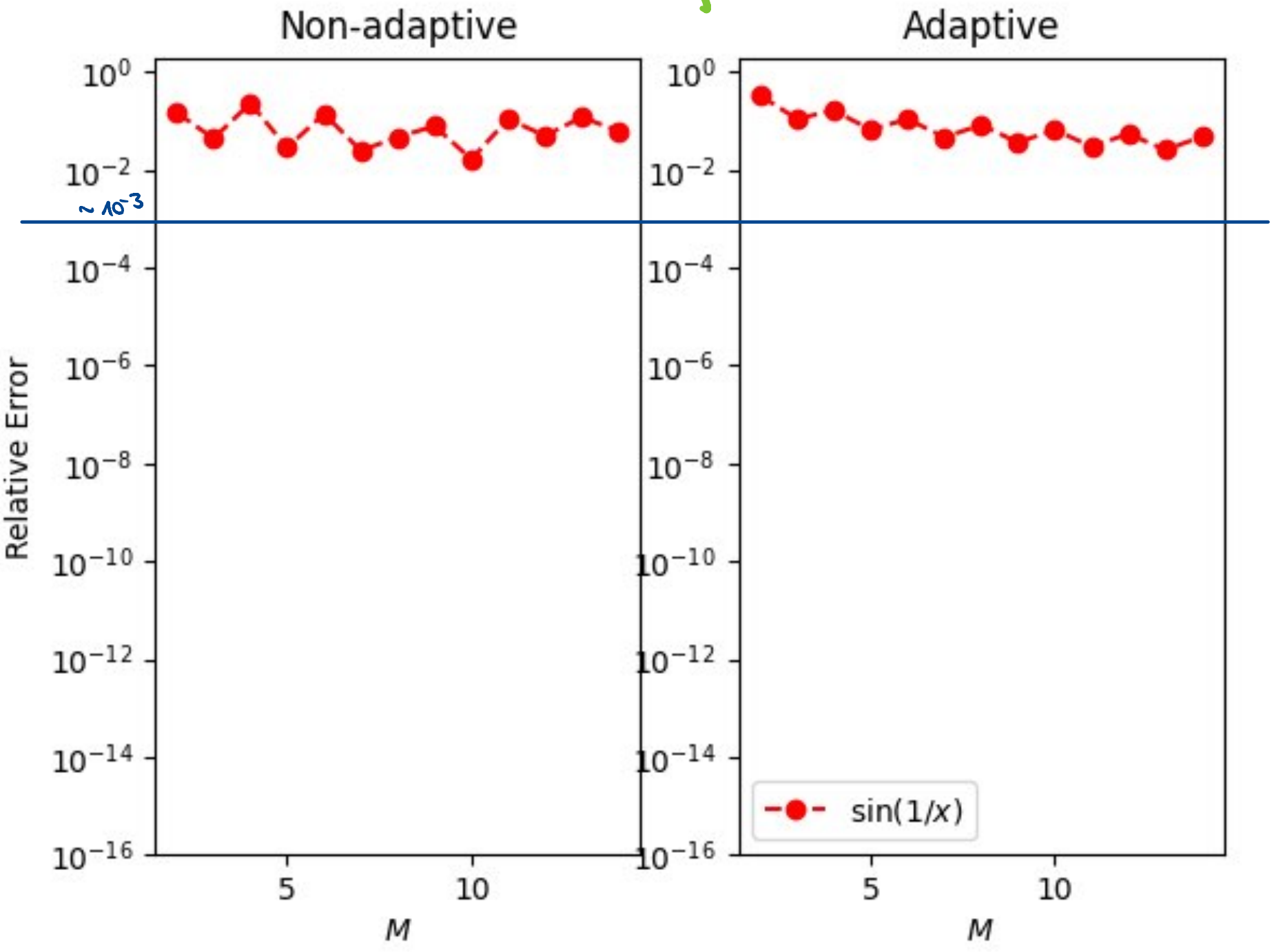
Error Gown


Non-adaptive
Adaptive
sin(1/x)
Relative Error
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
10^{-12}
10^{-14}
10^{-16}
~ 10^{-3}
5
10
M

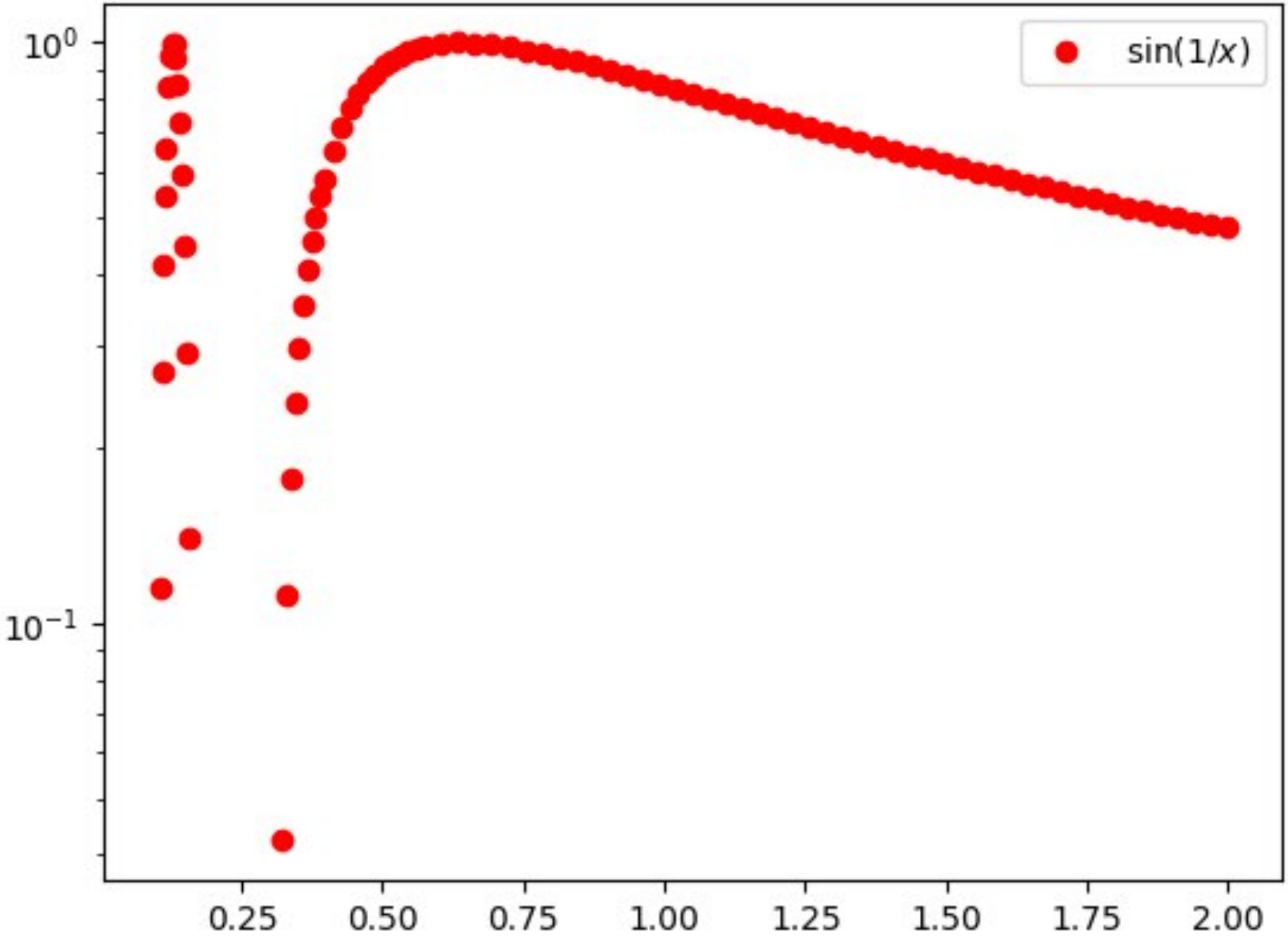
Mesh Gauss

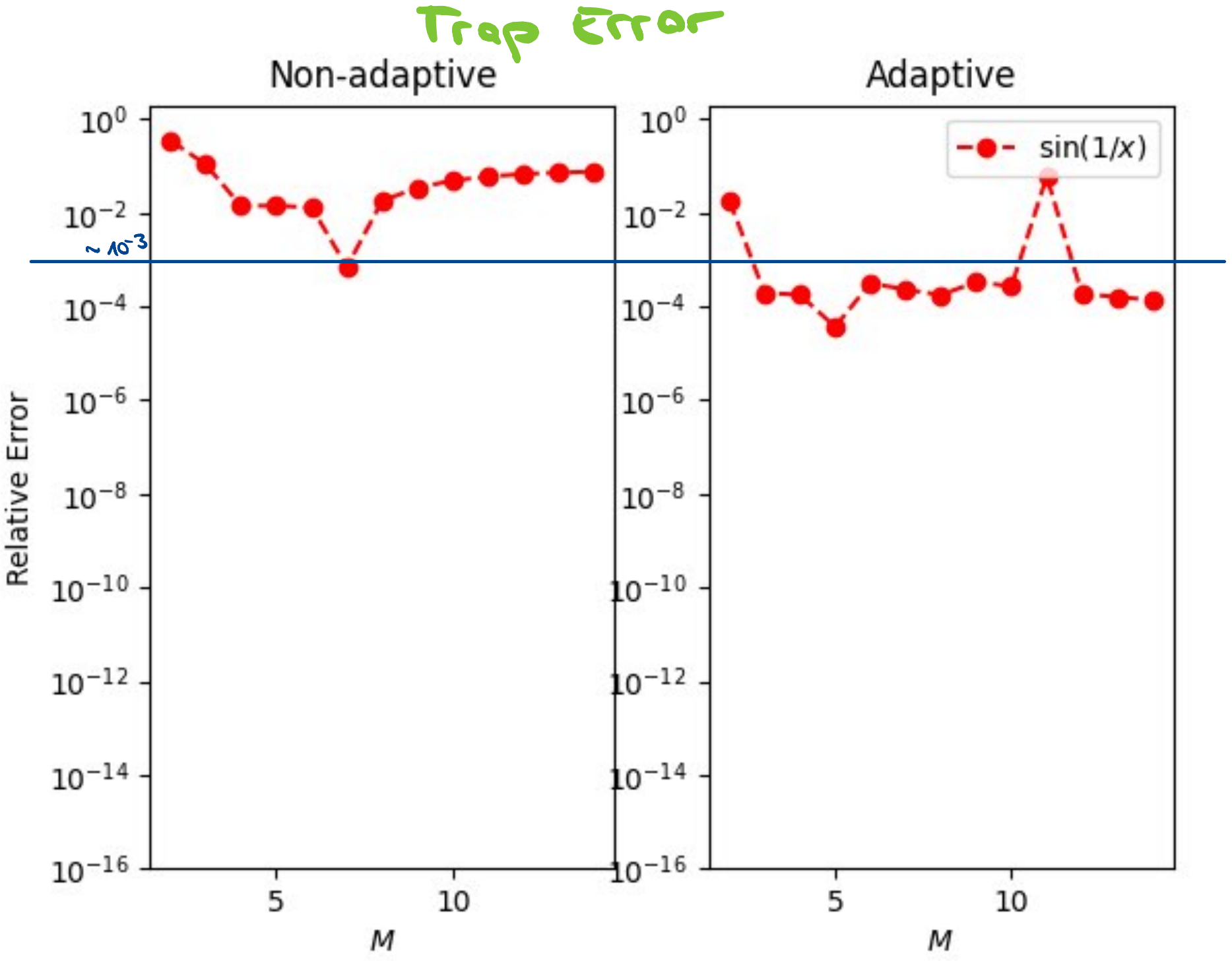


Error Simpsons

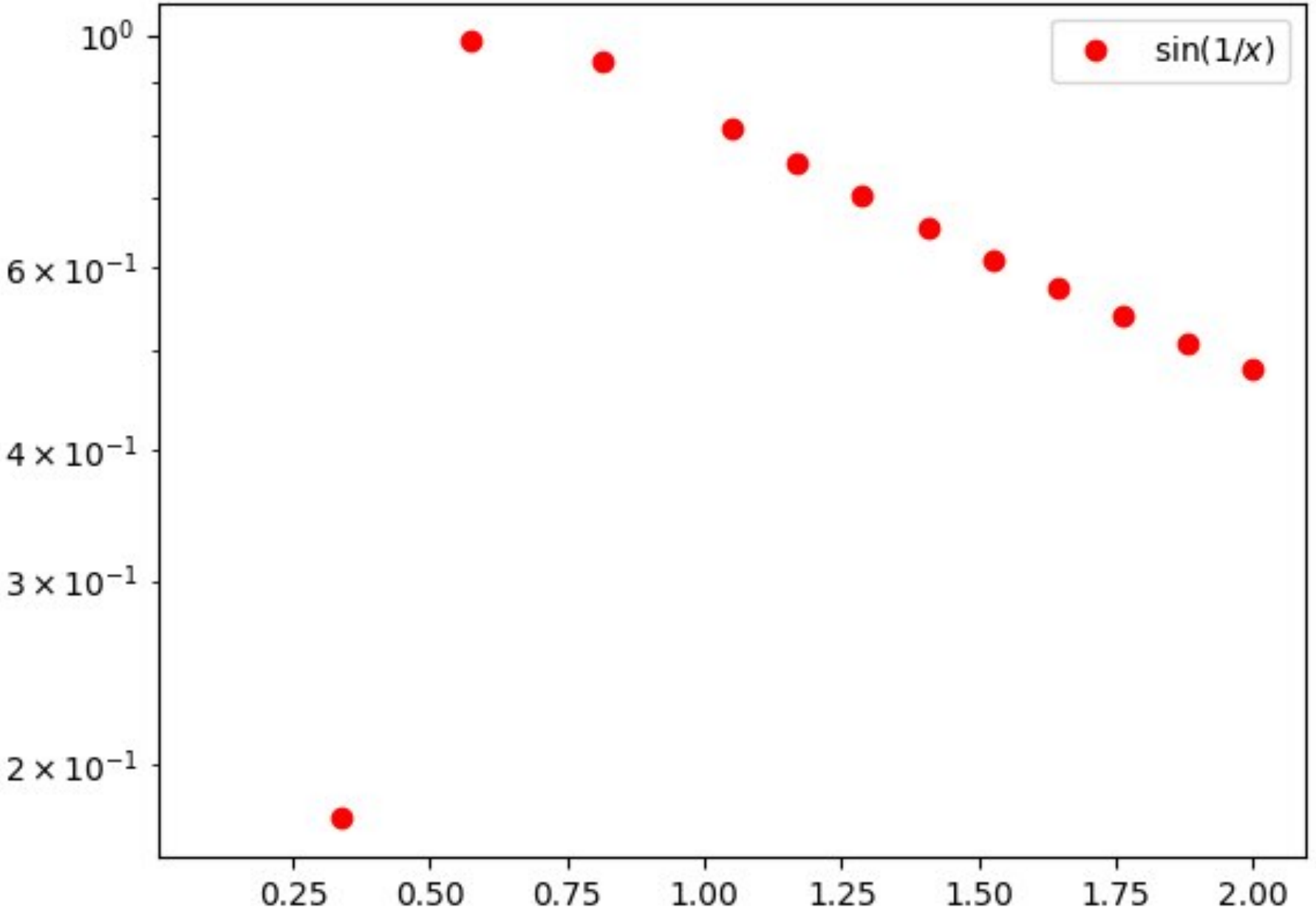


Mesh Simpsons




Trap Error
Non-adaptive
Adaptive
sin(1/x)
Relative Error
M
M
~ 10^-3
10^0
10^-2
10^-4
10^-6
10^-8
10^-10
10^-12
10^-14
10^-16
5
10

Trap Mesh


sin(1/x)
10^0
6×10^{-1}
4×10^{-1}
3×10^{-1}
2×10^{-1}
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00