

NM-Integrate

Target	$n$	#Midpoint	#Trapezium	#Simpsons
$\pi \approx 3.14159265$	1	3.2	3	3.133333
	2	3.162353	3.1	3.141569
	4	3.146801	3.131176	3.141593
	8	3.142895	3.138988	3.141593
$\ln 2 \approx 0.69314718$	1	0.666667	0.75	0.694444
	2	0.685714	0.708333	0.693254
	4	0.69122	0.697024	0.693155
	8	0.692661	0.694122	0.693148

NM-Differentiate

Target	$h$	#Forward	#Central
$f(x) = \cos x, \quad f'(\frac{\pi}{2}) = -1$	1	-0.841471	-0.958851
	0.1	-0.998334	-0.999583
	0.01	-0.999983	-0.999996
$f(x) = \frac{1}{1+\ln x}, \quad f'(2) \approx -0.174414$	1	-0.114111	-0.189667
	0.1	-0.165426	-0.174553
	0.01	-0.173468	-0.174415

## NM-Iterate

### FPI

Target	#Fixed	#Relaxed $\lambda = 0.5$	#Relaxed $\lambda = 1.4$
$g(x) = 2 \sin x + 2 \cos x$ $x \approx -2.68075641016$	-2.603732	-2.680753	-2.8662

All Values:

$n$	FPI $x_n$	RFPI, $\lambda = 0.5$	RFPI, $\lambda = 1.4$
0	-1.5	-1.5	-1.5
1	-1.853516	-1.676758	-1.994922
2	-2.478537	-1.938534	-2.906215
3	-2.807286	-2.261915	-2.213296
4	-2.545505	-2.53889	-3.034119
5	-2.777895	-2.660123	-1.870545

### Newton-Raphson

Target	#NRaphson
$f(x) = e^x - x - 2$ $f(1.14619) \approx 0$ $f(-1.84141) \approx 9$	1.146193  -1.841406

All Values:

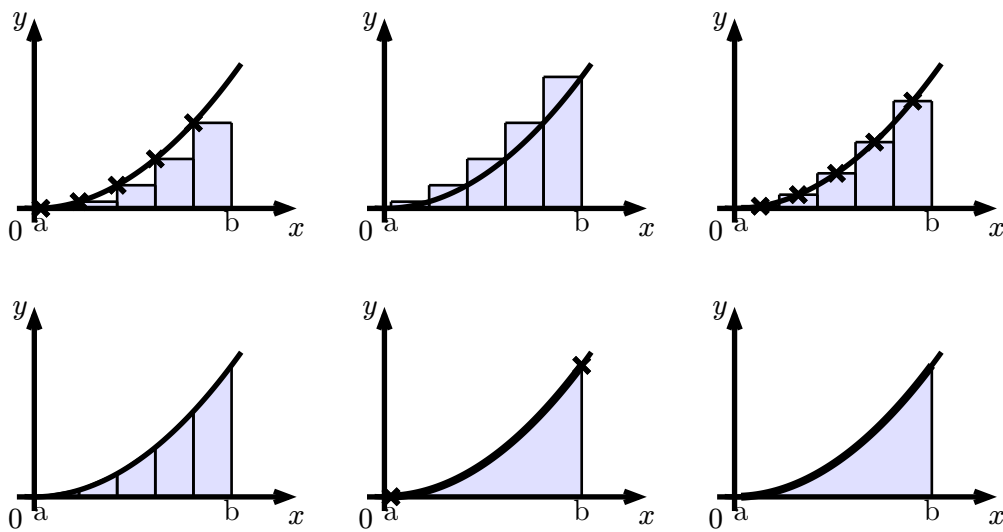
$n$	NR: $x_0 = 1$	NR: $x_0 = -1$
0	1	-1
1	1.163953	-1.999999
2	1.146421	-1.843482
3	1.146193	-1.841406
4	1.146193	-1.841406
5	1.146193	-1.841406

### Secant, False Position, Bisection for $\sin(x) = 0$

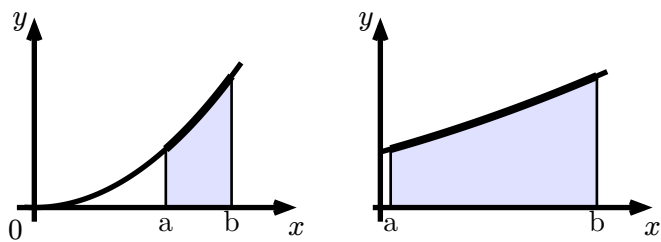
$x$	Secant	False Position	Bisection
$[-1, 1]$	$(-1, 1, 0.0, -0.0, 0)$	$((-1, 1), (0.0, 1), (0.0, 1), (0.0, 1), (0.0, 1))$	$((-1, 1), (-1, 0.0))$
$[0.5, 1]$	$(0.5, 1, -0.16210685, 0.0249181, -9.259e-5)$	Error, no change of sign.	Error, no change of sign.
$[-1.5, 1]$	$(-1.5, 1, -0.14394583, 0.02266478, -6.607e-5)$	$($ $(-1.5, 1),$ $(-1.5, -0.14394583),$ $(0.08382294, -0.14394583),$ $(-0.00012106, -0.14394583),$ $(4.2e-7, -0.14394583),$ $)$	$($ $(-1.5, 1),$ $(-1.5, -0.25),$ $(-1.5, -0.875),$ $(-1.5, -1.1875),$ $(-1.5, -1.34375),$ $)$

NM-PlotIntegral

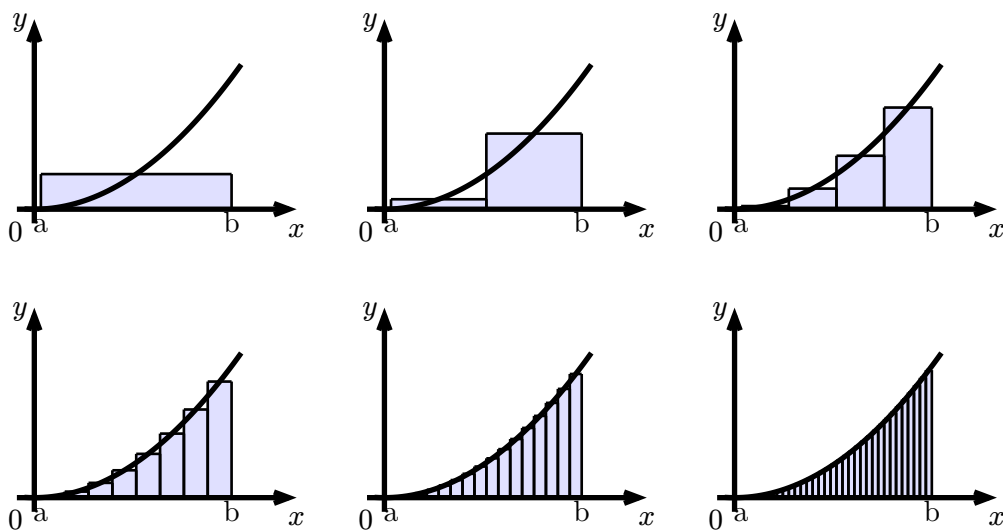
Types: Left, Right, Midpoint, Trapezium, Integral, 'asfsf'  
Alternatively including 'points'



Limits: inc\_x0, no x0



Strips: 1, 2, 4, 8, 16, 32



NM-Table

Integral Table

$n$	$M_n$	Difference	Ratio
1	0.99749		
2	0.96649	-0.031	
4	0.95894	-0.00755	0.24355
8	0.95707	-0.00187	0.24768
16	0.9566	-0.00047	0.25134

$n$	$T_n$	Difference	Ratio
1	0.87538		
2	0.93644	0.06106	
4	0.95146	0.01502	0.24599
8	0.9552	0.00374	0.249
16	0.95614	0.00094	0.25134

$n$	$S_{2n}$	Difference	Ratio
1	0.95679		
2	0.95647	-0.00032	
4	0.95645	-0.00002	0.0625
8	0.95645	0	0

Differential Table

$h$	$f'(x)$	Difference	Ratio
1	0.51083		
0.5	0.50263	-0.0082	
0.25	0.50065	-0.00198	0.24146
0.125	0.50016	-0.00049	0.24747
0.0625	0.50004	-0.00012	0.2449

$h$	$f'(x)$	Difference	Ratio
1	0.40547		
0.5	0.44629	0.04082	
0.25	0.47113	0.02484	0.60853
0.125	0.485	0.01387	0.55837
0.0625	0.49235	0.00735	0.52992

Iteration Table

FPI:

$n$	$x_n$	Difference	Ratio
1	1		
2	0.84147	-0.15853	
3	0.74562	-0.09585	0.60462
4	0.67843	-0.06719	0.70099
5	0.62757	-0.05086	0.75696

RFPI:

$n$	$x_n$	Difference	Ratio
1	1		
2	0.92074	-0.07926	
3	0.85839	-0.06235	0.78665
4	0.80759	-0.0508	0.81476
5	0.76511	-0.04248	0.83622

NRaphson:

$n$	$x_n$	Difference	Ratio
1	1		
2	-0.5574	-1.5574	
3	0.06594	0.62334	0.25699
4	-0.0001	-0.06604	0.16996
5	0	0.0001	0.02293

Secant:

$n$	$x_n$	Difference	Ratio
1	1		
2	0.5	-0.5	
3	-0.16211	-0.66211	2.00714
4	0.00465	0.16676	0.32255
5	-0.00002	-0.00467	0.08203