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Find the root of the equation $x^2 - x - 2 = 0$ by using bisection method

$\Rightarrow f(x) = x^2 - x - 2$

$f(0) = -2 < 0$ $f(1) = -2 < 0$

$f(2) = 0$ $f(3) = 4 > 0$

$a = 1$, $b = 3$, $[1, 3]$

$b - a < 0.01$

a	b	f(a)	f(b)	$c = \frac{a+b}{2}$	f(c)	b-a
1	3	-2	4	2	0	2
1	2	-2	0	1.5	-1.25	1
1.5	2	-1.25	0	1.75	-0.68	0.5
1.75	2	-0.68	0	1.87	-0.37	0.25
1.87	2	-0.37	0	1.93	-0.20	0.13
1.93	2	-0.20	0	1.96	-0.11	0.07
1.96	2	-0.11	0	1.98	-0.05	0.04
1.98	2	-0.05	0	1.99	-0.02	0.02
1.99	2	-0.02	0	1.995	-0.01	0.01
1.995	2	-0.01	0	1.997	x	0.005

$\therefore (b-a)$ at $b = 2$ is < 0.01 , Hence root, $f(x)$ is 2.

② $f(x) = \cos(x) \cosh(x) + 1$, $a = 1.8$, $b = 1.9$

a	b	f(a)	f(b)	$c = \frac{a+b}{2}$	f(c)	b-a
1.8	1.9	4.06	4.37	1.85	4.21	0.1
1.8	1.85	4.06	4.21	1.82	4.13	0.05
1.8	1.82	4.06	4.13	1.81	4.09	0.02
1.8	1.81	4.06	4.09	1.80	4.06	0.01
1.8	1.80	4.06	4.06	1.8	x	0

$\therefore (b-a)$ at $b = 1.80$ is less than 0.01

Hence, the root is 1.80