$f(x) = x^3 + e^x - 3 = 0$

a	b	f(a)	f(b)	c	f(c)	Absolute error / tolerance
0	1	-2	0.718282	0.5	-1.22628	1
0.5	1	-1.22628	0.718282	0.75	-0.46112	0.5
0.75	1	-0.46112	0.718282	0.875	0.068797	0.25
0.75	0.875	-0.46112	0.068797	0.8125	-0.21009	0.125
0.8125	0.875	-0.21009	0.068797	0.84375	-0.07425	0.0625
0.84375	0.875	-0.07425	0.068797	0.859375	-0.00365	0.03125
0.859375	0.875	-0.00365	0.068797	0.867188	0.032344	0.015625
0.859375	0.867188	-0.00365	0.032344	0.863281	0.014292	0.007813
0.859375	0.863281	-0.00369	0.01429649	0.861328	0.005308174	0.003906
0.859375	0.861328	~~-0.02 82533 76~~ -0.00369	0.005308174	0.8603515	0.00082717	0.001953

The root is between $a = 0.859375$ and $b = 0.867188$, $f(a) = -0.00365 = -ve$, $f(b) = 0.032344 = +ve$

$c = \frac{a+b}{2} = 0.863281$, $f(c) = 0.014292 = +ve$, so this time, $b := c = 0.863281$ (new value)

Now, root is between $a = 0.859375$, $b = 0.863281$, $f(a) = -.00365 = -ve$, $f(b) = 0.01429649 = +ve$

$c = \frac{a+b}{2} = 0.861328$, $f(c) = 0.005308174 = +ve$, so, $b := c = 0.861328$, $b - a = 0.003906$

Now, root is between $a = 0.859375$, $b = 0.861328$. $f(a) = -0.00365$, $f(b) = 0.005308174 = +ve$

$c = \frac{0.859375 + .861328}{2} = 0.8603515$, $f(c) = 0.00082717 = +ve$, so, $b := c = 0.8603515$,

tolerance, $b - a = 0.001953$

CamScanner