* find root $f(x) = x^2 + 2x - 5$ $x[1,2]$

Sol:-

$a = 1$ $b = 2$

$f(a) = 1 + 2(1) - 5$

$= -2$

$f(b) = (2)^2 + 2(2) - 5$

$= 4 + 4 - 5$

$= -3$

$c = \frac{1+2}{2} = \frac{3}{2} = 1.5$

$f(c) = (1.5)^2 + 2(1.5) - 5$

$= 2.25 + 3 - 5$

$= 0.25$

update $b \to c$

$a = 1$ $b = 1.5$

$c = \frac{1 + 1.5}{2} = 1.25$

$f(c) = (1.25)^2 + 2(1.25) - 5$

$= 1.5625 + 2.5 - 5$

$= -0.9375$

update $a \to c$

$a = 1.25$ $b = 1.5$

$c = \frac{1.25 + 1.5}{2} = 1.375$

$f(c) = (1.375)^2 + 2(1.375) - 5$

$= -0.35937$

⇒ By performing these calculations form above table

i	a	f(a)	b	f(b)	$c=\frac{a+b}{2}$	f(c)
1	1	-2	2	3	1.5	0.25
2	1	-2	1.5	0.25	1.25	-0.9375
3	1.25	-0.9375	1.5	0.25	1.375	-0.35937
4	1.375	-0.35937	1.5	0.25	1.43750	-0.05859
5	1.4375	-0.05859	1.5	0.25	1.46875	0.09473
6	1.4375	-0.05859	1.46875	0.09473	1.45313	0.01785
7	1.4375	-0.05859	1.45313	0.01785	1.44532	-0.02041
8	1.44532	-0.02041	1.45313	0.01785	1.44923	-0.00127
9	1.44923	-0.00127	1.45313	0.01785	1.45118	0.00828
10	1.44923	-0.00127	1.45118	0.00828	1.45021	0.00353
11	1.44923	-0.00127	1.45021	0.00353	1.44972	0.00113
12	1.44923	-0.00127	1.44972	0.00113	1.44948	-0.00005