```
(* First Define Bisection Method
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   www.brivetacademy.in*)
```

In[5]:=
```
Bisection[a0_, b0_, e0_, n_] :=
 Module[{},
  a = N[a0];
  b = N[b0];
  e = N[e0];
  i = 0;
  output = {{i, a, b, }};
  While[i < n,
   c = (a + b) / 2;
   output = Append[output, {i + 1, a, b, c}];
   If[Sign[f[b]] == Sign[f[c]],
    b = c, a = c];
   If[(b - a) / 2 < e, Print["Condition Exists at ", i + 1, "."]; Break[]];
   i = i + 1;
  ];
  Print[NumberForm[TableForm[output,
     TableHeadings → {None, {"i", "a{i}", "b{i}", "c{i}"}}], 16]];
  Print["Root p = ", NumberForm[c, 16]];
 ]

(*Solving the function f(x) with Bisection Method*)
f[x_] = x^3 + 2 x^2 - 3 x - 1;
Print["f(x) = ", f[x]];
Bisection[1, 2, 10^-5, 50]
```

$f(x) = -1 - 3x + 2x^2 + x^3$

Condition Exists at 16.

i	a{i}	b{i}	c{i}
0	1.	2.	Null
1	1.	2.	1.5
2	1.	1.5	1.25
3	1.	1.25	1.125
4	1.125	1.25	1.1875
5	1.1875	1.25	1.21875
6	1.1875	1.21875	1.203125
7	1.1875	1.203125	1.1953125
8	1.1953125	1.203125	1.19921875
9	1.1953125	1.19921875	1.197265625
10	1.197265625	1.19921875	1.1982421875
11	1.1982421875	1.19921875	1.19873046875
12	1.1982421875	1.19873046875	1.198486328125
13	1.198486328125	1.19873046875	1.1986083984375
14	1.1986083984375	1.19873046875	1.19866943359375
15	1.19866943359375	1.19873046875	1.198699951171875
16	1.19866943359375	1.198699951171875	1.198684692382812

Root p = 1.198684692382812

In[9]:=
```
(*Solving the function f(x) with Bisection Method*)
f[x_] = x^5 + 5 x^2 - 7 x - 1;
Print["f(x) = ", f[x]];
Bisection[1, 2, 10^-5, 50]
```

$f(x) = -1 - 7x + 5x^2 + x^5$

Condition Exists at 16.

i	a{i}	b{i}	c{i}
0	1.	2.	Null
1	1.	2.	1.5
2	1.	1.5	1.25
3	1.	1.25	1.125
4	1.125	1.25	1.1875
5	1.125	1.1875	1.15625
6	1.15625	1.1875	1.171875
7	1.171875	1.1875	1.1796875
8	1.1796875	1.1875	1.18359375
9	1.1796875	1.18359375	1.181640625
10	1.1796875	1.181640625	1.1806640625
11	1.1806640625	1.181640625	1.18115234375
12	1.1806640625	1.18115234375	1.180908203125
13	1.1806640625	1.180908203125	1.1807861328125
14	1.1806640625	1.1807861328125	1.18072509765625
15	1.1806640625	1.18072509765625	1.180694580078125
16	1.180694580078125	1.18072509765625	1.180709838867187

Root p = 1.180709838867187