```
x0 = Input["Enter Initial guess: "];
Nmax = Input["Enter Maximum number of ieration: "];
eps = Input["Enter the value of convergence parameter: "];
Print[x0];
Print[Nmax];
Print[eps];
f[x_] := Cos[x];
Print["f[x_] =", D[f[x], x]];
For[i = 1, i ≤ Nmax, i++, x1 = N[x0 - (f[x] /. x → x0) / (D[f[x], x] /. x → x0)];
If[Abs[x1 - x0] < eps, Return[x1], x0p = x0; x0 = x1];
Print["In", i, " th number of iteration the approximation root is", x1];
Print["Estimated error is", Abs[x1 - x0p]]];
Print["The final Approximation of root is", x1];
Print["Estimated error is", Abs[x1 - x0]];
Plot[f[x], {x, -1, 3}]
```

```
1
```

```
20
```

$$\frac{1}{1\,000\,000}$$

```
f[x_] =-Sin[x]
In1 th number of iteration the approximation root is1.64209
Estimated error is0.642093
In2 th number of iteration the approximation root is1.57068
Estimated error is0.0714173
In3 th number of iteration the approximation root is1.5708
Estimated error is0.00012105
```

Out[57]= 1.5708

```
The final Approximation of root is1.5708
```

Estimated error is 5.91305×10^{-13}

Out[60]=