Bisection Method

F(X)= 2coshx \* sinx – 1

X0= -1

alpha

X1= 1

X0=0.4

alpha

X1=0.5

F(X0) = 2cosh(-1) \* sin(-1) – 1 = -3.5969

F(X1) = 2cosh(1) \* sin(1) – 1 =1.5969

**X2= X0+X1/2= {-1 +1} / 2 = 0**

F(X2) = -1

X3= 0.5

F(X3) =0.0811

X4= 0 +0.5/2= 0.25

F(X4)= -0.4896

X5=0.25+0.5/2 = 0.375

F(X5) = -0.215

Secant Method

Xn+1 = Xn – F(Xn)/F’(Xn) ----------- I

F’(Xn)={ F(Xn) – F(Xn-1) } / {Xn – Xn-1}

n=1

F’(X1) ={F(X1) – F(Xo)} / {X1 – X0}

Xn+1 = Xn – F(Xn)/ { F(Xn) – F(Xn-1) } / {Xn – Xn-1}

 = Xn – F(Xn) {Xn – Xn-1} / { F(Xn) – F(Xn-1) }

 = [Xn { F(Xn) – F(Xn-1) } – F(Xn) {Xn – Xn-1} ] / { F(Xn) – F(Xn-1) }

**Xn+1 = { F(Xn) Xn-1 - Xn F(Xn-1) }/ { F(Xn) – F(Xn-1) }**

**n=1**

**Xn-1 = X0=0.4**

**Xn = X1=0.5**

F(X)= 2coshx \* sinx – 1

F(Xn-1) = F(0.4)=-0.1580

 F(Xn) =F(0.5)=0.0811

**Xn+1 = { F(Xn) Xn-1 - Xn F(Xn-1) }/ { F(Xn) – F(Xn-1) } n=1**

**X2 = { F(X1) Xo – X1 F(X0) }/ F(X1) – F(Xo)**

 **=**0.0811 \* 0.4 – 0.5 \* (-0.1580) / { 0.0811 – (-0.1580)}

 = 0.466

F(X2) = F(0.466) = 2cosh(0.466) \* sin (0.466) – 1 = -0.0020

X3= **{ F(X2) X1 - X2 F(X1) }/ { F(X2) – F(X1) } n=2**

**X3= 0.46681**

**F(X3) = -0.0000574**