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Module Module1

Function f(ByVal x As Double) As Double

Return Math.Cos(x) - x

End Function

Function fPrime(ByVal x As Double) As Double

Return -Math.Sin(x) - 1

End Function

Function NewtonRaphson(ByVal initialApproximation As Double, ByVal tolerance As Double, ByVal maxIterations As Integer) As Double

Dim p0 As Double = initialApproximation

Dim p As Double

Dim i As Integer = 1

While i <= maxIterations

p = p0 - f(p0) / fPrime(p0)

If Math.Abs(p - p0) < tolerance Then

Console.WriteLine("Procedure completed successfully")

Return p

End If

i += 1

p0 = p

End While

Console.WriteLine("Method failed after " & maxIterations & " iterations")

Return Double.NaN

End Function

Sub Main()

Dim initialApproximation As Double = 0.5

Dim tolerance As Double = 0.00001

Dim maxIterations As Integer = 100

Dim result As Double = NewtonRaphson(initialApproximation, tolerance, maxIterations)

Console.WriteLine("Approximate solution: " & result)

End Sub

End Module