getRootWithMethod.f08

```
subroutine getRootWithMethod(initialGuess, tolerance)
          implicit none

          real, intent(in) :: initialGuess, tolerance
          real :: error, guess
          integer iteration
          real, external :: getFunction, fOf

          guess = initialGuess
          error = fOf(guess)
          iteration = 0
          do while (error > tolerance)
            iteration = iteration + 1
            guess = getFunction(guess)
            error = fOf(guess)

            write(*,*)iteration,guess, error
          end do

      end subroutine getRootWithMethod
```

mainProgram.f08

```
subroutine mainProgram(initialGuess, tolerance)
          implicit none

          real initialGuess, tolerance
          write(*,*) "Enter your initial guess"
          read(*,*) initialGuess
          write(*,*) "Enter the preferred tolerance"
          read(*,*) tolerance

          call getRootWithMethod(initialGuess,
tolerance)
                end subroutine mainProgram
```

getFunction.f08

```
real function getFunction(x)
          implicit none

          real, intent(in) :: x
          real a, b, c, d
          a = 0.7
          b = -3.8
          c = 4.6
          d = -3.1

          getFunction = -d/((a*exp(b*x)) + c)
                  end function getFunction
```

fOf.f08

```
real function fOf(x)
          implicit none

          real, intent(in) :: x
          real a, b, c, d
          a = 0.7
          b = -3.8
          c = 4.6
          d = -3.1
          fOf = (a*exp(b*x)*x) + (c*x) + d
                  end function fOf
```

OUTPUT

ERROR - Program received signal SIGSEGV: Segmentation fault - invalid memory reference.