test.R

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```
library(numDeriv)
n <- c(38,34,125)
l <- function(p)
{
  n[1]*log(1/2-p/2) + n[2]*log(p/4) + n[3]/(1/2+p/4)
}

deriv <- function(f,x,h=0.001)
{
  (f(x+h) - f(x))/h
}

dldp <- function(p)
{
  deriv(l,p)
}

newton_method <- function(f,dfdx,x0,eps,debug=T)
{
  n <- 0
  repeat
  {

    x1 <- x0 - f(x0) / dfdx(x0)
    n <- n + 1

    if (debug==T) { cat("iteration=",n," x=",x1,"\n") }

    #if(abs(x1 - x0) < eps)
    #{
    #  break
    #}
    x0 <- x1
    if (n == 10)
      break
  }

  list(root=x0,iter=n)
}

sol <- newton_method(l,dldp,0.5,1e-3)
```

```
## iteration= 1  x= 1.369573
```

```
## Warning in log(1/2 - p/2): NaNs produced

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## iteration= 2  x= NaN
## iteration= 3  x= NaN
## iteration= 4  x= NaN
## iteration= 5  x= NaN
## iteration= 6  x= NaN
## iteration= 7  x= NaN
## iteration= 8  x= NaN
## iteration= 9  x= NaN
## iteration= 10  x= NaN
```

```
print(sol)
```

```
## $root
## [1] NaN
##
## $iter
## [1] 10
```