

This assignment will enhance your understanding of Newton's Method for solving $f(x) = 0$.

You will work on this in student computer labs (Johnson Center, Innovation) or with a personal copy of Maple. You may collaborate with other students, but **your final work should be yours and you should be capable of explaining it on an exam or quiz.**

The assignment: Carry out the calculations requested below. Turn in a print-out from your work with answers to the questions. Use the attached cover sheet for your assignment.

1. Create a numerical estimate for π by solving the equation $\cos(x/2) = 0$ starting at $x_0 = 2.5$.
2. Create another estimations for π by solving $\tan(x/4) - 1 = 0$.
3. Do problem 23 from text, section 3.7, using Maple.

The following sample Maple code will be very useful. Here I am calculating the square root of 5 by solving $x^2 - 5 = 0$.

```
> f := x -> x^2 - 5;           (call f the function)
> df := x -> 2 * x;          (call the derivative df)
> Digits := 20;              (tell Maple to display 20 digits)
> x[1] := 2;                  (start at 1)
> for n from 1 to 10 do x[n + 1] := x[n] - f(x[n])/df(x[n]); od;      (do the
loop - end is od)
```

Maple assignment 2, cover sheet Name: _____

Write out your main conclusions on this sheet. Attach other Maple work.

1. A table of values for Newton's method is:

2. A table of values for Newton's method is:

3. A table of values for Newton's method is: