

## Math 166, Homework Set #2

**Due Date: Thursday, September 9, 2004**

1. Do the following problems from the textbook:

- Section 2.1: Problems 6, 14, 18.
- Section 2.2: Problems 6, 12, 16.
- Section 2.3: Problems 20.

For the computational problems, show the approximation and error ( $|f(x)|$  for Bisection and Newton methods and  $|x - g(x)|$  for Fixed-Point iteration.)

2. Derive a Newton iteration for the function given by  $f(x) = \sqrt{x}$  (write down the expression for  $x_{n+1}$  in terms of  $x_n$ ).

- Plot the function on Matlab and show the tangent line intersecting the x-axis for the initial iteration with  $x_0 = 2$ .
- Explain why problems arise with this function.