MATH 321-01 (151)
HW # 2
Due Sept. 17, 2015

Q1. Do Problem 7 textbook page 65 but for $g(x) = 1 + \tan^{-1}(x)$ on the interval $[1, 1 + \frac{\pi}{2}]$

Q2. Determine the number of iterations necessary to solve $f(x) = e^{-x} - \cos(x) = 0$ with accuracy 10^{-7} using the Bisection Method if we were to start on the interval $[2, 7]$.

Q3. If we use the bisection method to approximate a zero of a function on the interval $[2, 3]$, what is the error bound after 12 iterations?

Q4. For each of the following fixed-point problem $g(x)$ find an equivalent root-finding problem $f(x)$. Does the fixed point iteration converges to the indicated fixed point p, if we start sufficiently close to p? Why?

(a) $g(x) = -16 + 6x + \frac{12}{x}$ $\qquad p = 2$

(b) $g(x) = \frac{2}{3}x + \frac{1}{x^2}$ $\qquad p = 3^{\frac{1}{3}}$

(c) $g(x) = \frac{12}{1+x}$ $\qquad p = 3$