SOLUTIONS TO HW 6:

§3.1 #9, 11 35, 13, 14 Secant Method program

§3.1 #9 straight-forward } Problem 1

#11. not graded

#13 $f(x) = e^{-4x} - 1/10$ use $[0,5]$ } Prob 2

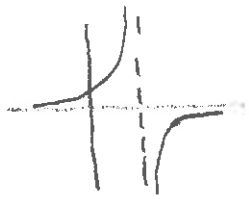
Bisection is MUCH faster

Prob 3

#14. a. $f(x) = \frac{1}{x^2+1}$ on $[0,5]$ This function is always positive so both methods fail.

b. $f(x) = \frac{1}{x-1}$ on $[0,3]$ This function also has no root, but $f(0)f(5) < 0$ so the algorithms will run.

For bisection, the algorithm homes in on $c \approx 1$ but $f(c) = \pm$ Huge numbers!



Since $f(x)$ approaches the asymptote at $x = 1$.

For regula falsi, at the 3rd iteration $c = 1$ and $f(c) = \infty$!

Successive iterations return NaN.

Program