

Newton, Secant and basic GEM Assignment (Revised)

Due 10/29

Page 104 #10 Use m-file **newton** to compute value from Newton's method. For part (b) use $p_0 = 3.5$. In parts (a) and (b) use tolerance $1E-15$.

Page 104 #16 Use m-file **newton** with $p_0 = 0$ with tolerance $5*10^{-7}$. Show the output from Newton's method for the values $h = 0.6, 2.4, 4.2$. Create a table of values of h and the value to which the numerical algorithm converged. Using only the ordered pairs of (h, the value Newton's method), estimate the minimum cushion pressure when $h = 3.4$. Explain your method.

Page 112 #7 Use the MATLAB command **secant** & follow the directions to create the tables requested in the statement of the problem..

Page 112 #20 We are revising the problem as follows; (Use the secant method.)

- (1) Starting with the deposit of \$13000 and the monthly payment of \$200 show that the couple does not need an account with any interest returned to achieve the 3 year goal.
- (2) Change the goal of \$20,000 in three years to \$25,000. What is the lowest interest rate the couple needs if they deposit \$200 monthly?
- (3) Change the goal of \$20,000 in three years to \$25,000. What is the lowest interest rate the couple needs if they deposit \$250 monthly?

Page 157 #2 Do Gaussian elimination by **hand** to reduce the augmented matrix to upper triangular form and then apply back substitution. List the row operations you use and show the upper triangular form of the augmented matrix.

Page 157 #11 You can use m-files **reduce** and **bksub** to apply the row operations & perform back substitution. If \mathbf{x} is the solution vector from part (a) and \mathbf{x}_p is the solution vector after a change has been made (like in parts (b) and (c)) then the Matlab command below will compute the vector of percent of change in the components. Determine the percent of change in both parts (b) and (c).

Error = abs(abs((x - xp)./x)*100) ← note the ./ (period slash)

For directions on how to use any m-files list here, type help followed by the m-file name & press enter.