

ASEN 5107 Nonlinear Finite Element Methods Spring 2007

Homework 8: Incremental Solution Methods

Due Thursday March 22, 2007

Be sure to attach this sheet as cover to your HW

Four exercises:

18.1 (easy, descriptive only)

18.2

18.3 or 18.4 (pick one; 18.3 is more challenging)

18.5

The Exercises at the end of Chapter 18 were converted from old Fortran code to *Mathematica 4*. Two Notebooks are linked to the Chapter 18 Index.

Exercise 18.2 deals with the traversal of a limit point (snap-through) using load and arclength control combined with various integration rules.

Exercise 18.3 is deceptively simple but involves passing two turning points. No commercial code can still do this one in automatic fashion. It requires programming, so it may take longer than 18.4.

The fifth problem traverses the bifurcation point of a simple problem using a technique called artificial perturbation or artificial imperfection injection, the theory of which will be covered in a later Chapter.