**Final Project**

**Plane element implementation**

Ting Yang

Parameter table:

a = b = 5

c = 1

E = 150

$\upsilon = 0.15$

p = 20

step number = 12

Mesh:

4*4 8 nodes element square thin plate

Shape function:

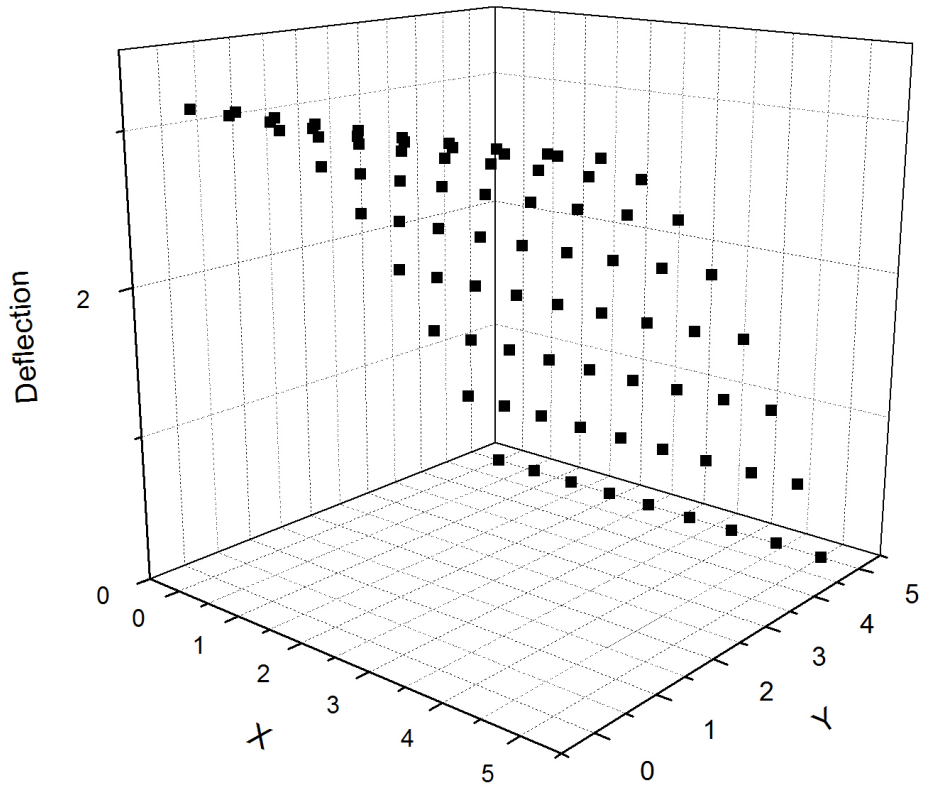
$$N = \frac{1}{16}(4 - 3\xi_1)\left(\xi_1{}^2 + \xi_1\right)^2(5\xi_2 + 5)(\xi_2{}^2 - \xi_2)^2$$

To get deflection behavior under different load, set step number as 12.

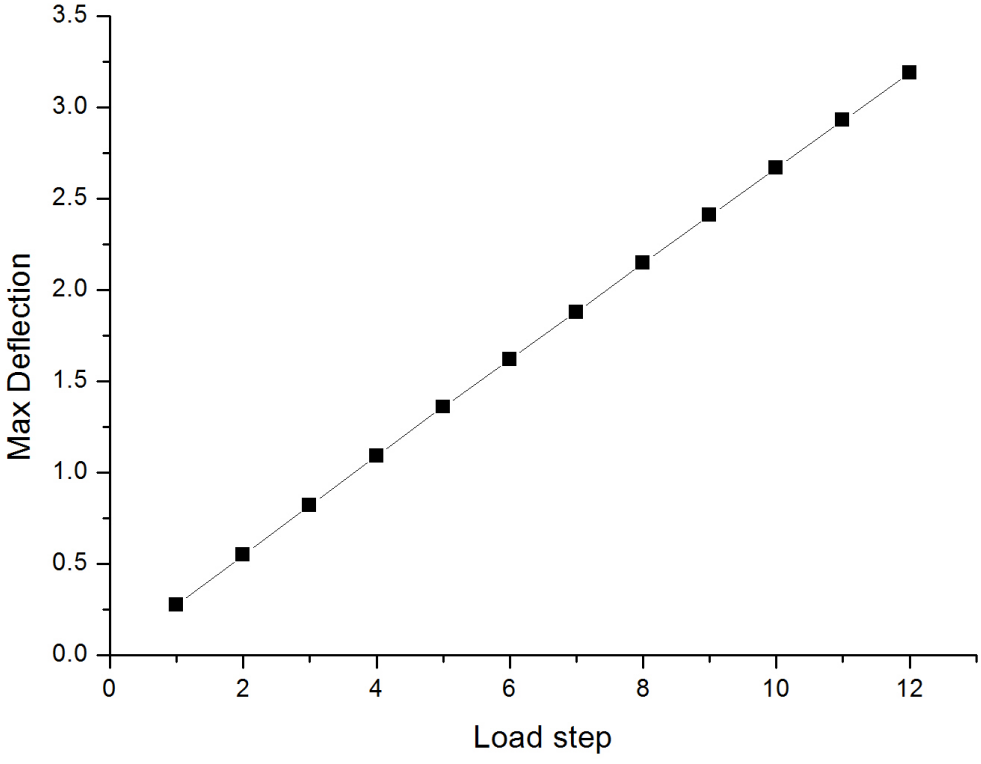
Calculate the max transverse deflection and $\sigma_{xx}$

Compare the deflection curve with analytical solution, the FEM result agrees with the exact solution.

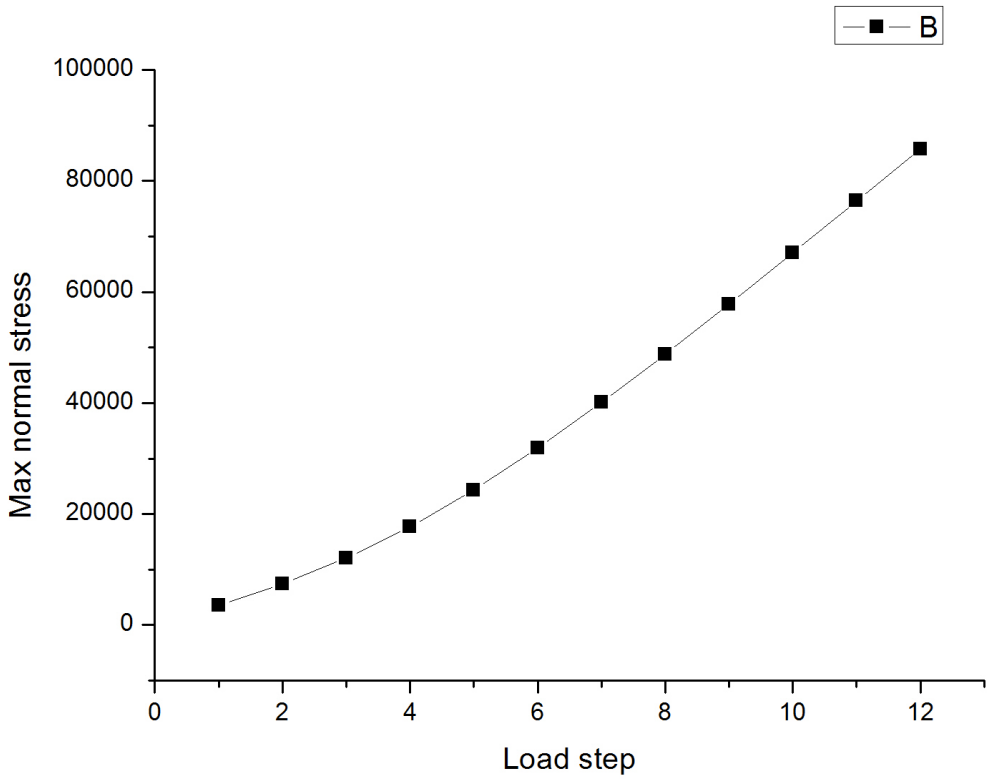
**Deflection with p = 20**




**Deflection versus load step**



**Max normal stress versus load step**




**Min normal stress versus load step**