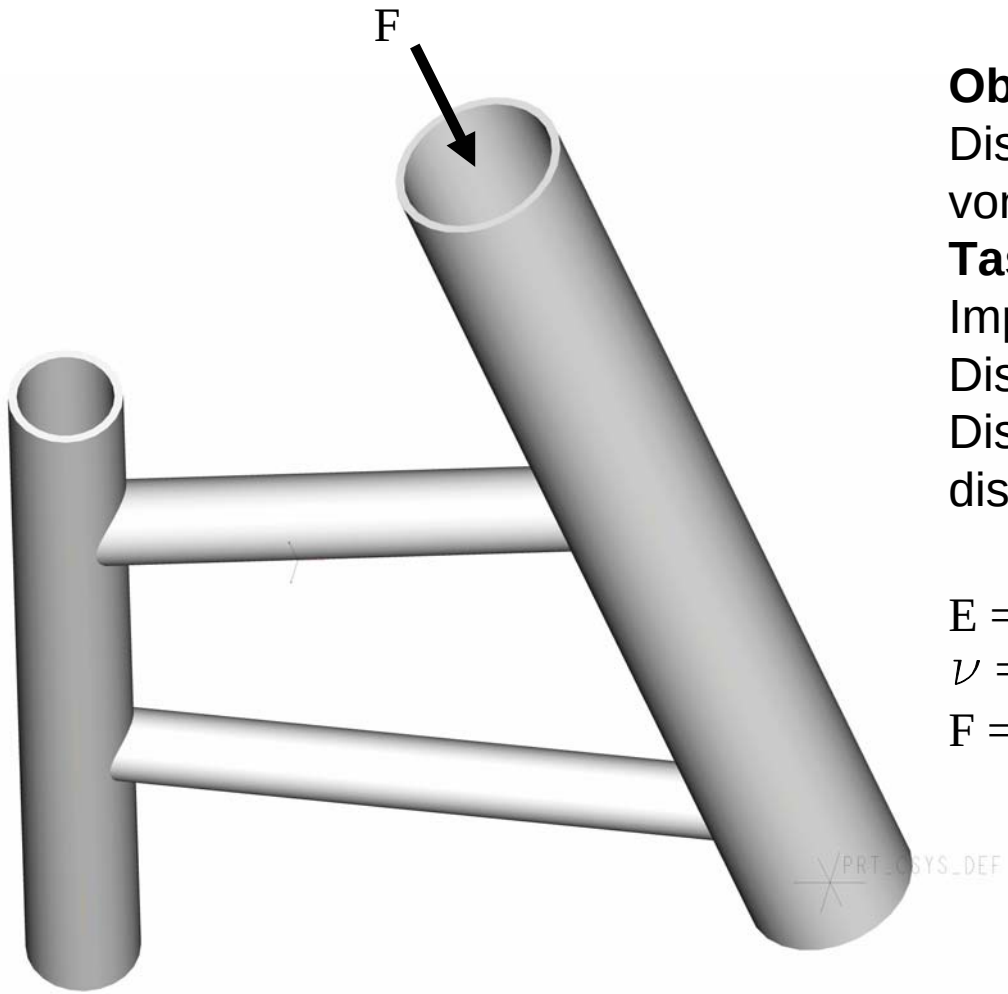
Course in ANSYS

Example0153

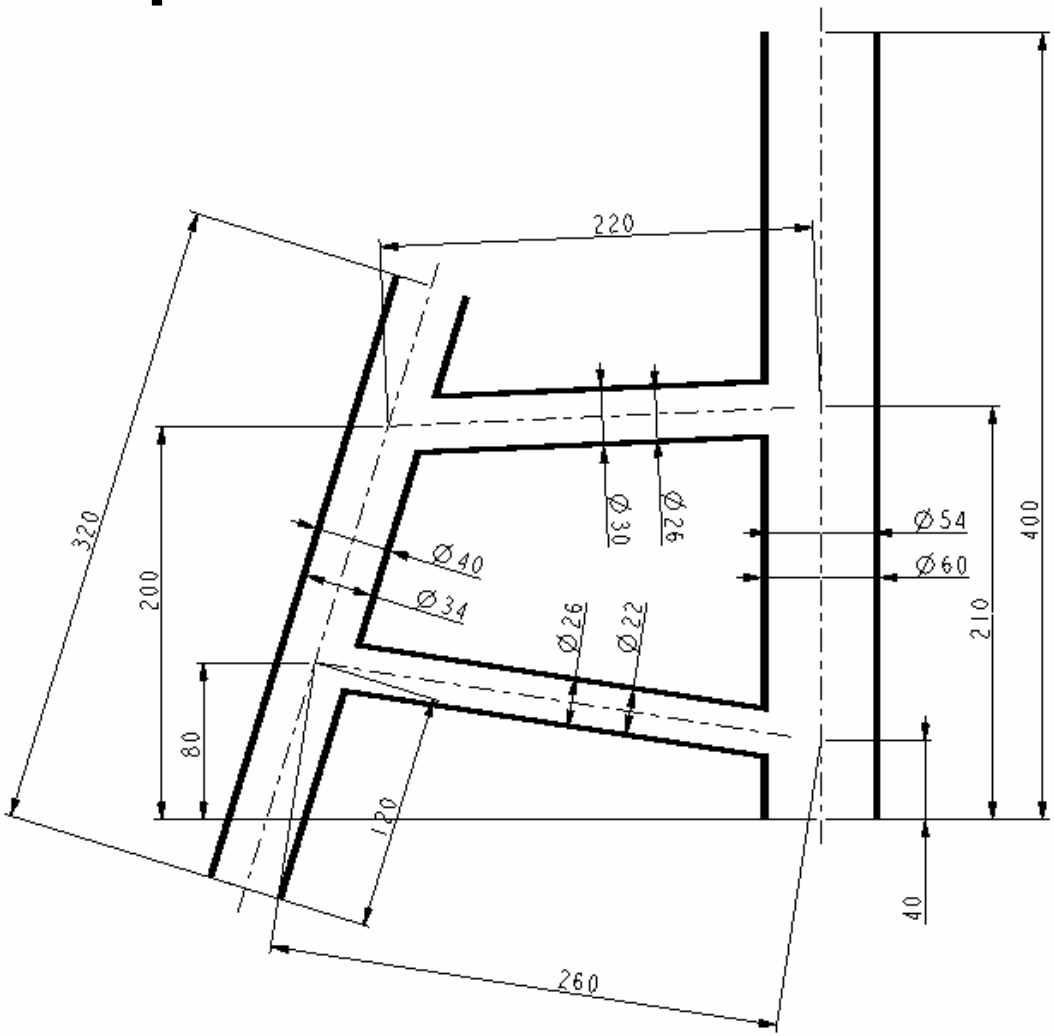
Example – Offshore structure



Objective:
Display the deflection figure and von Mises stress distribution
Tasks:
Import geometry from IGES.
Display the deflection figure?
Display the von Mises stress distribution?

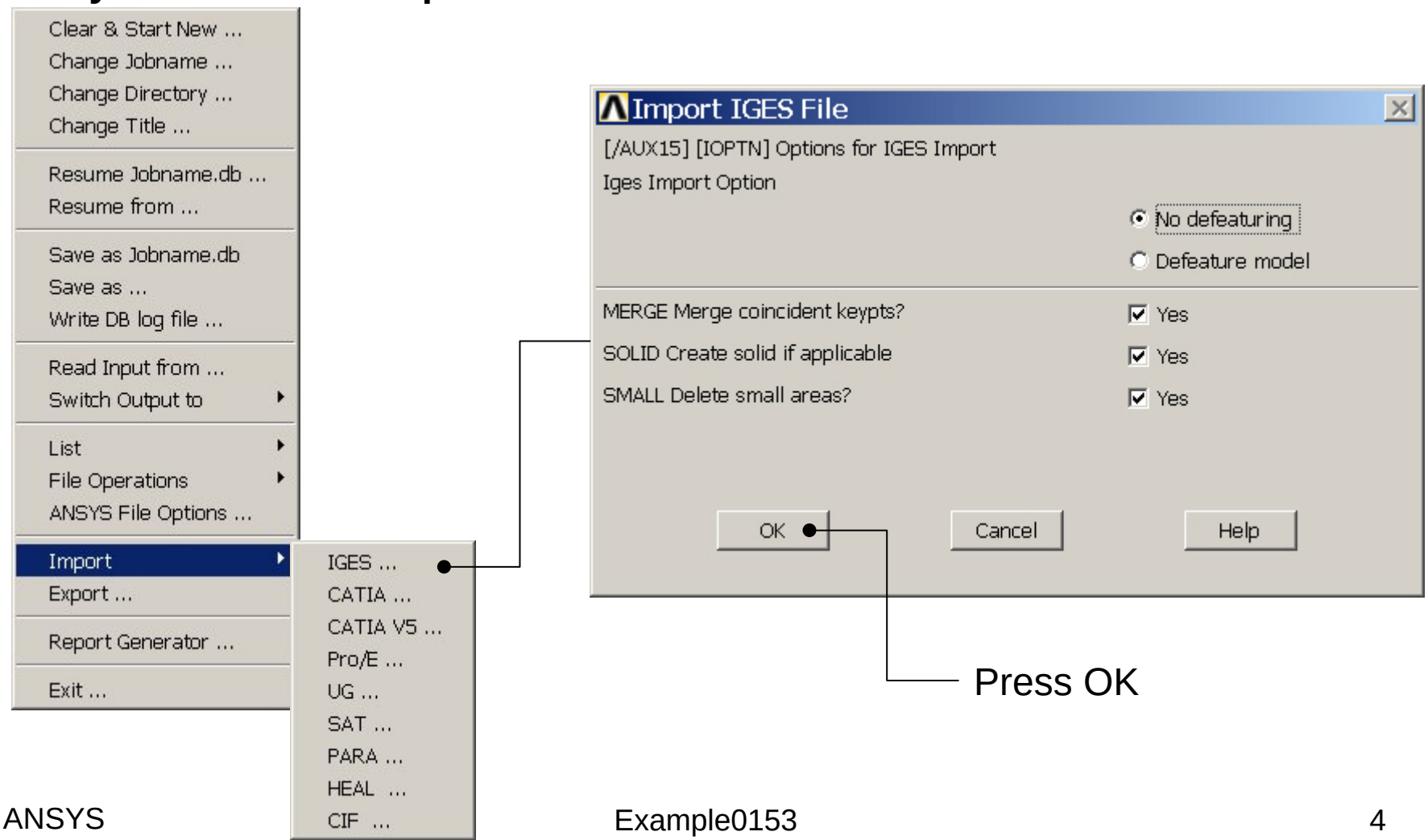
$E = 210000 N/mm^2$
$\nu = 0.3$
$F = -10000$

Example – Offshore structure

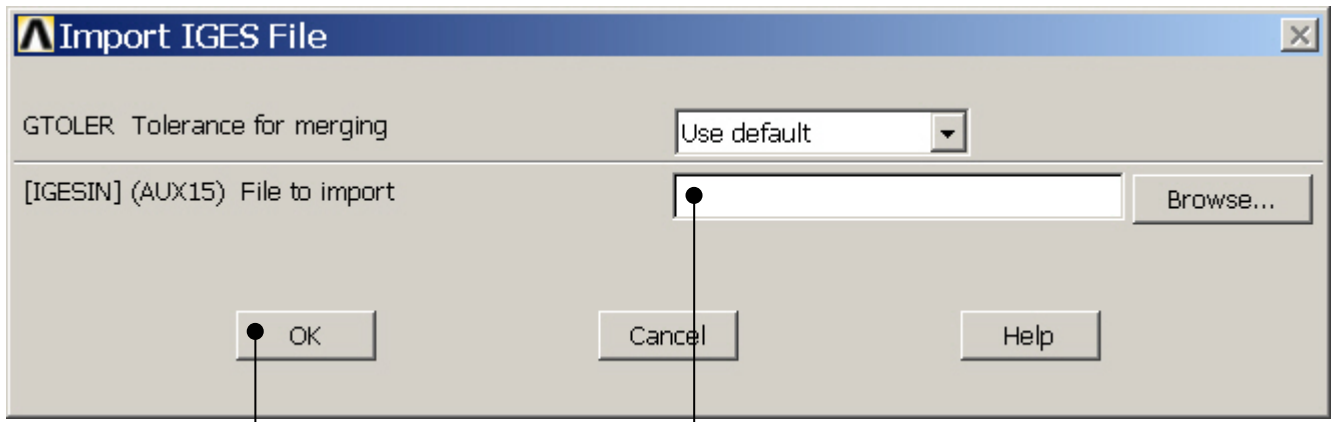


Example – Import IGES

Utility Menu > File > Import > IGES

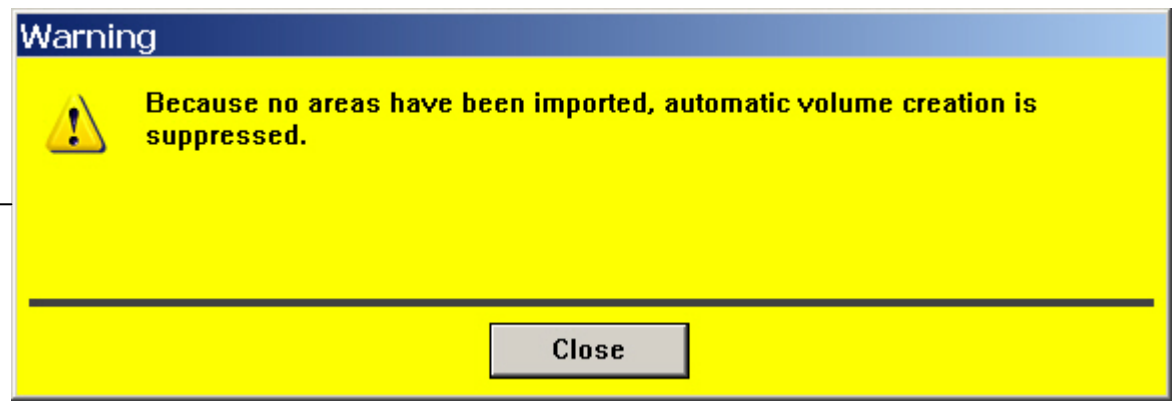


Example – Import IGES

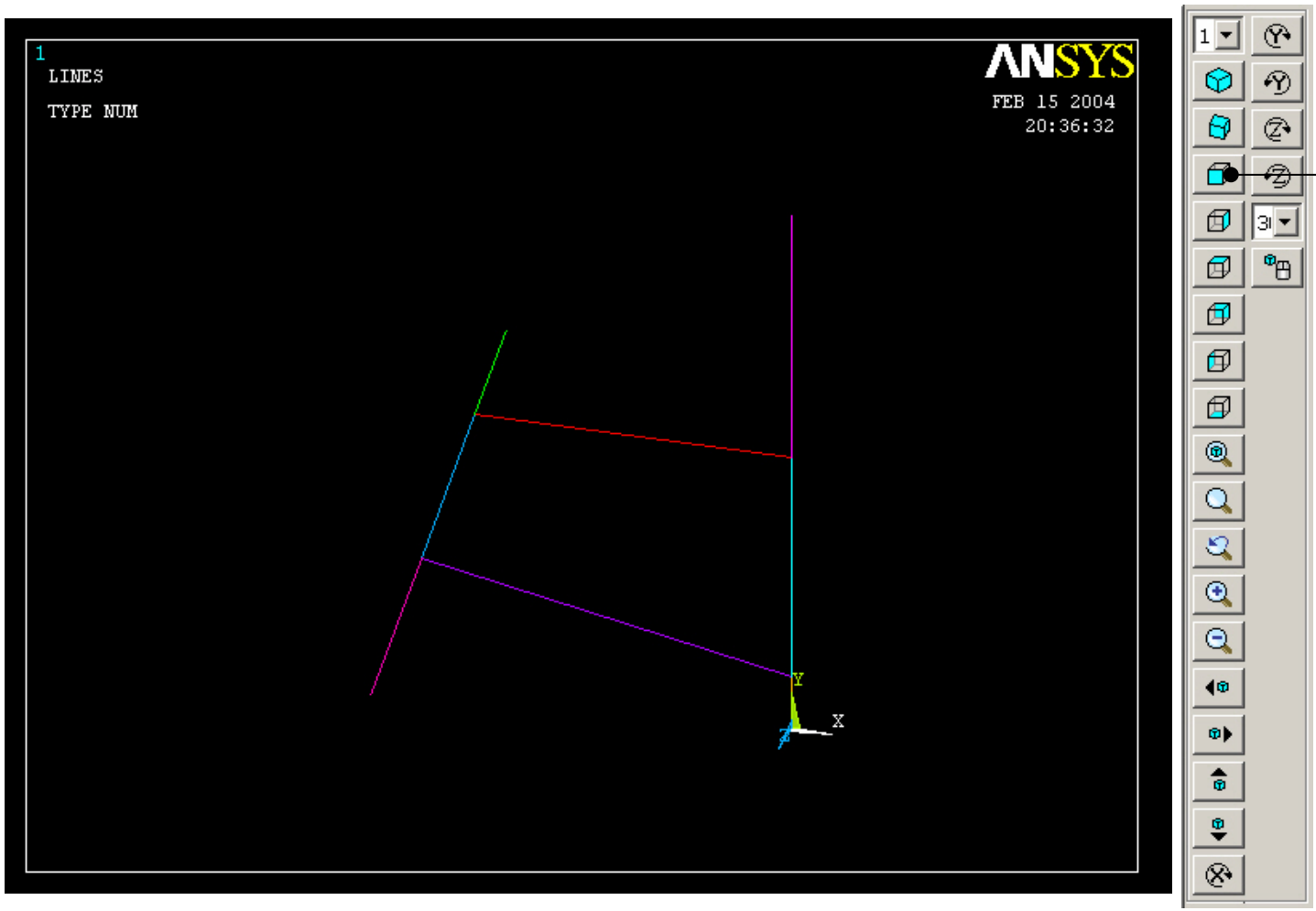


Browse to find offshore-structure-skeleton.igs

Press OK

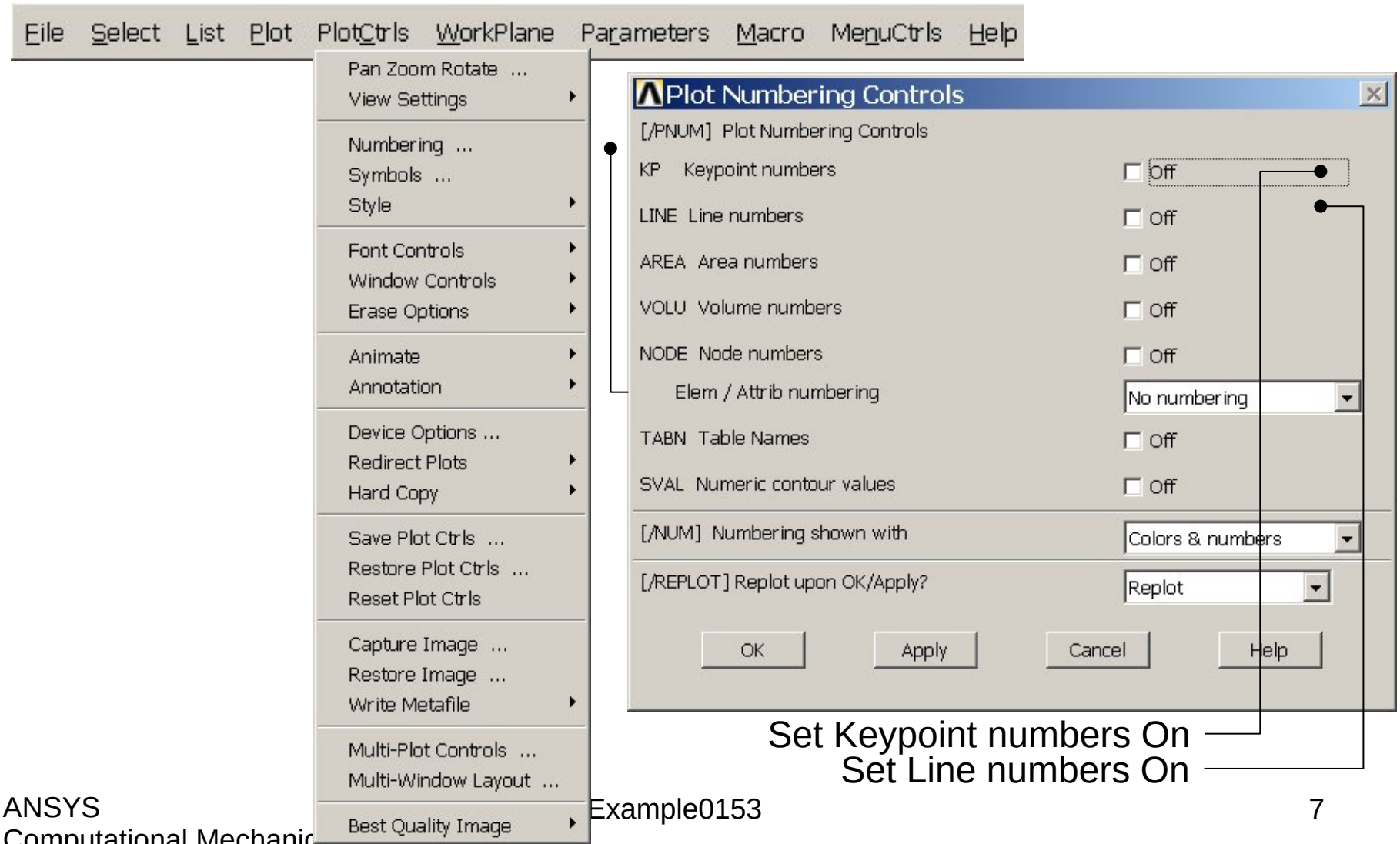


Example - Display

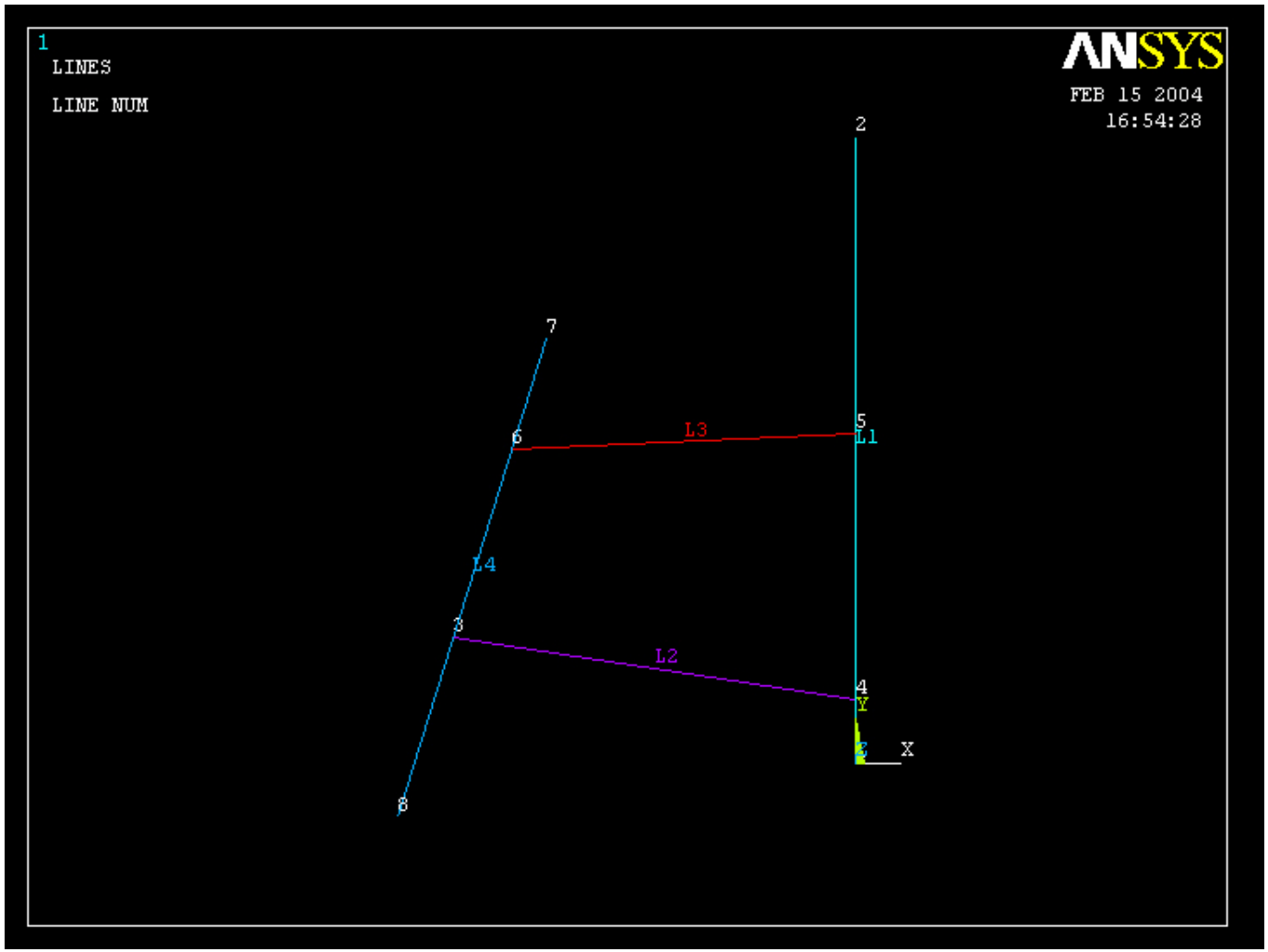


Select
Front View

Example - Numbering

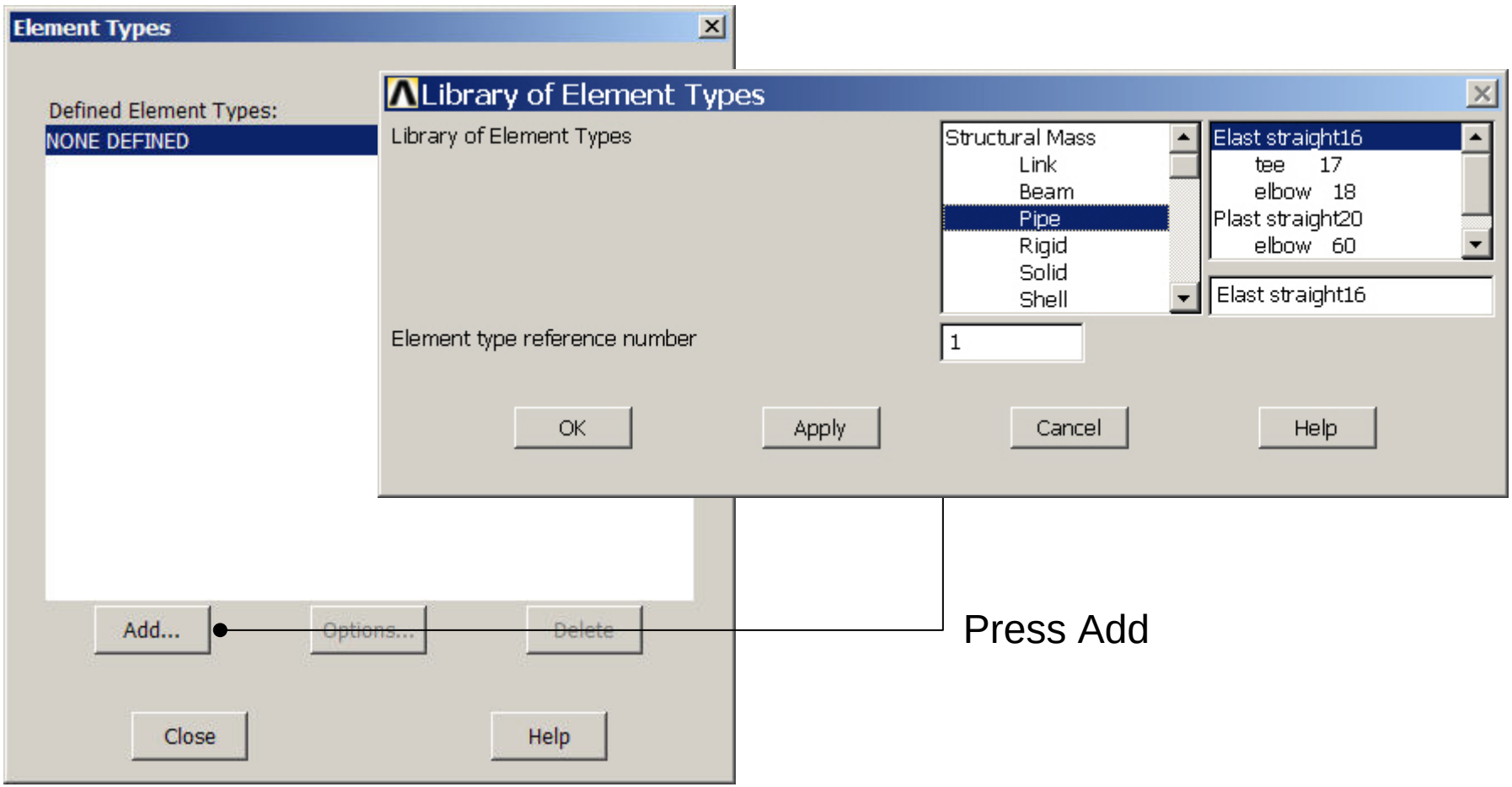


Example - Numbering



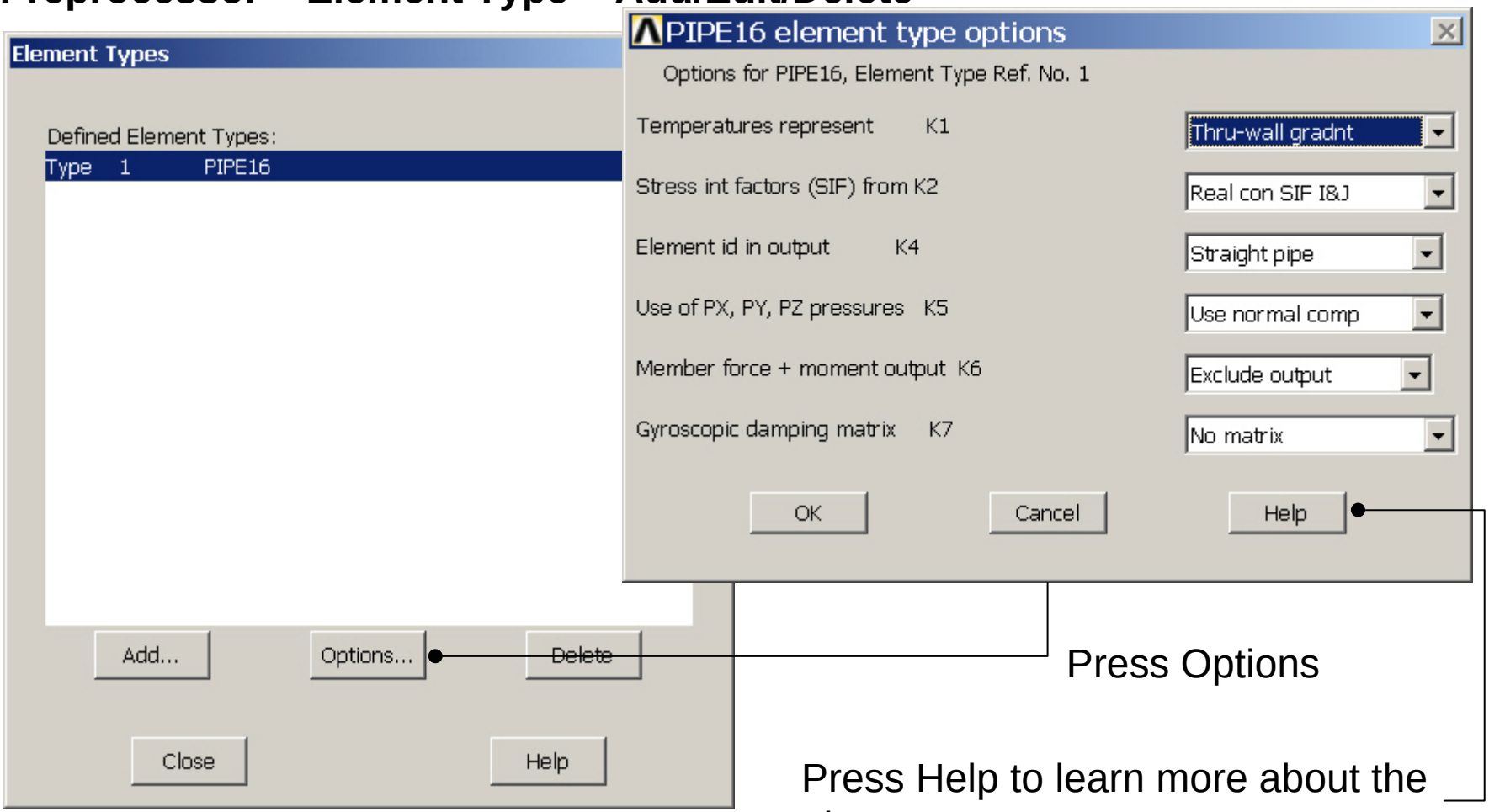
Example – Element Type

Preprocessor > Element Type > Add/Edit/Delete



Example - Element Type

Preprocessor > Element Type > Add/Edit/Delete

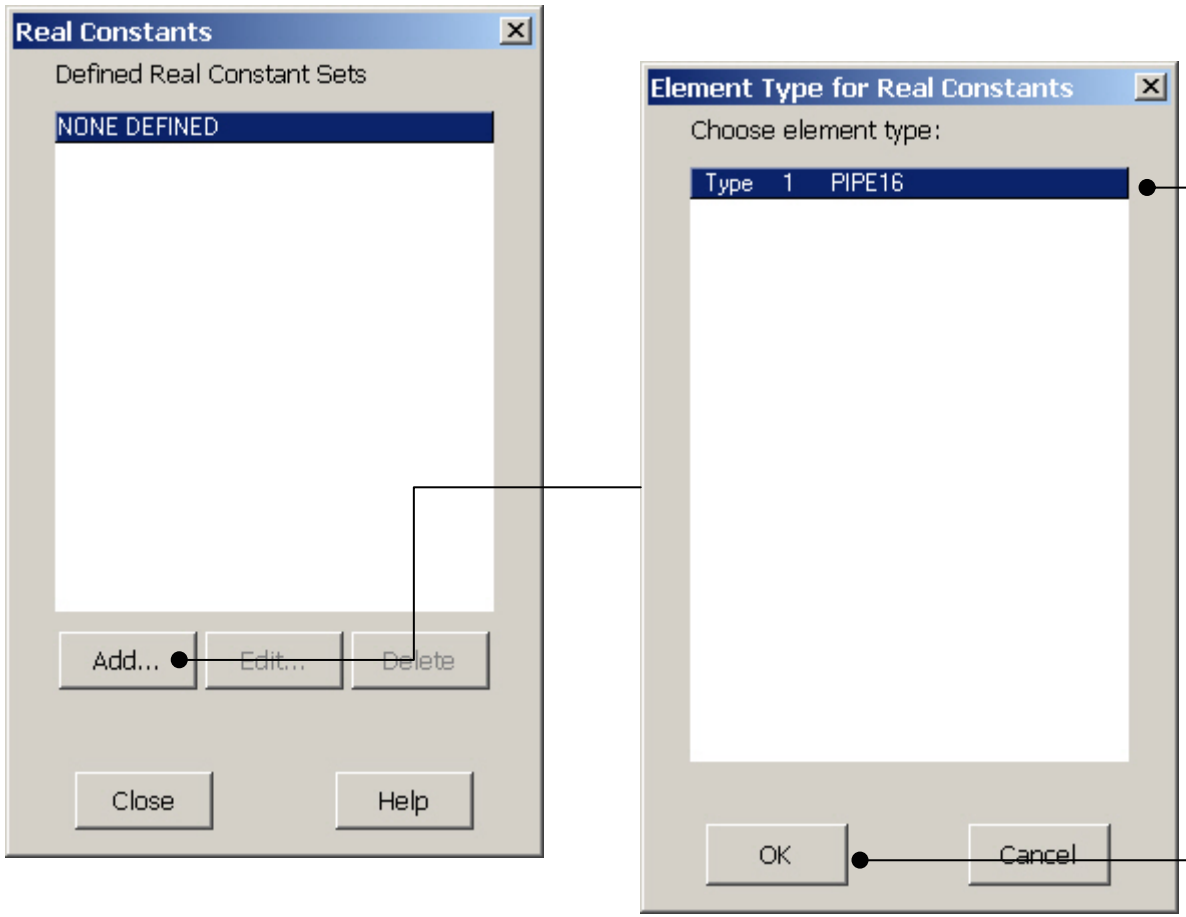


Press Options

Press Help to learn more about the element.

Example – Real Constants

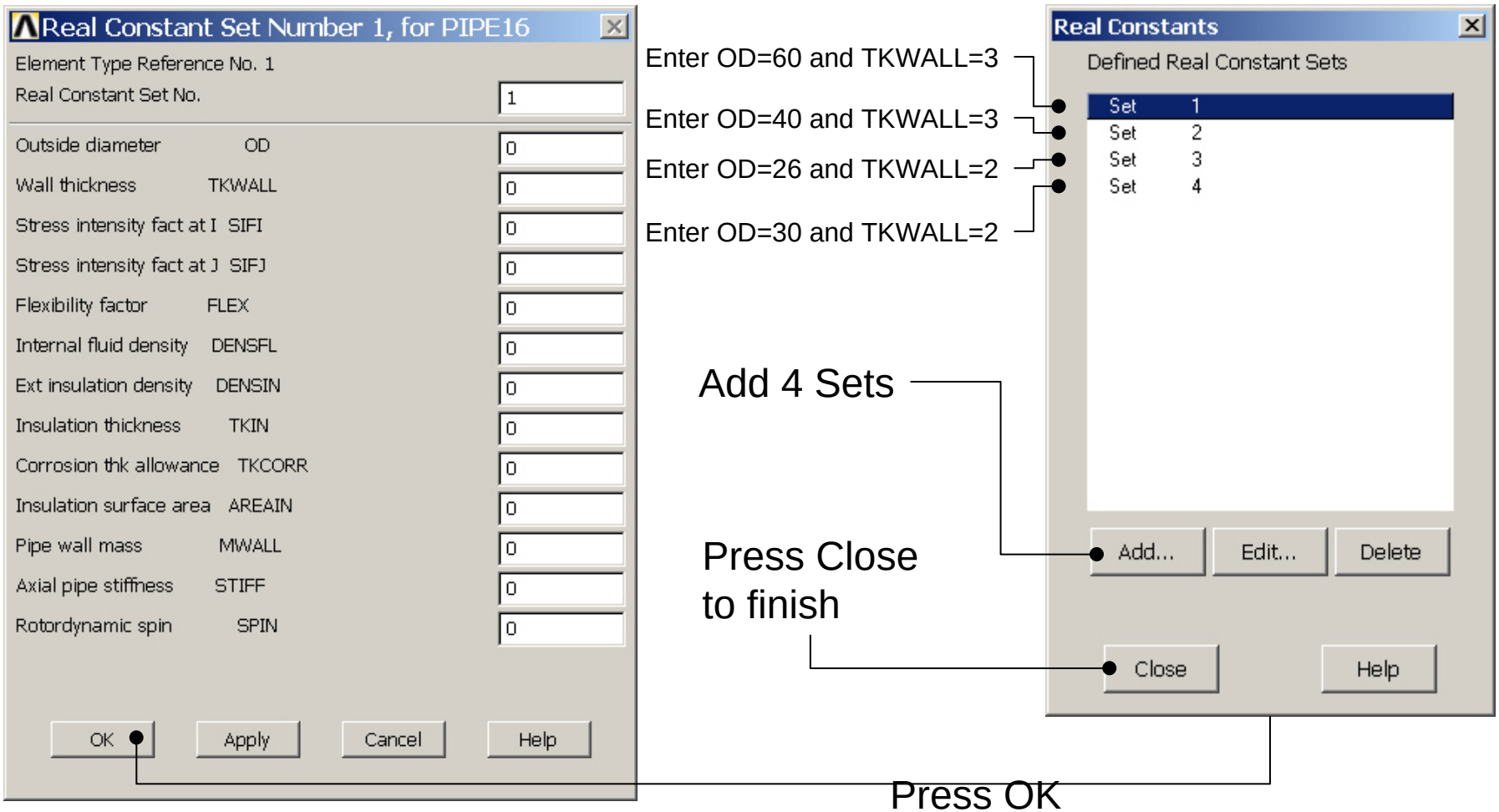
Preprocessor > Real Constants > Add



Place the cursor on the relevant element and press OK

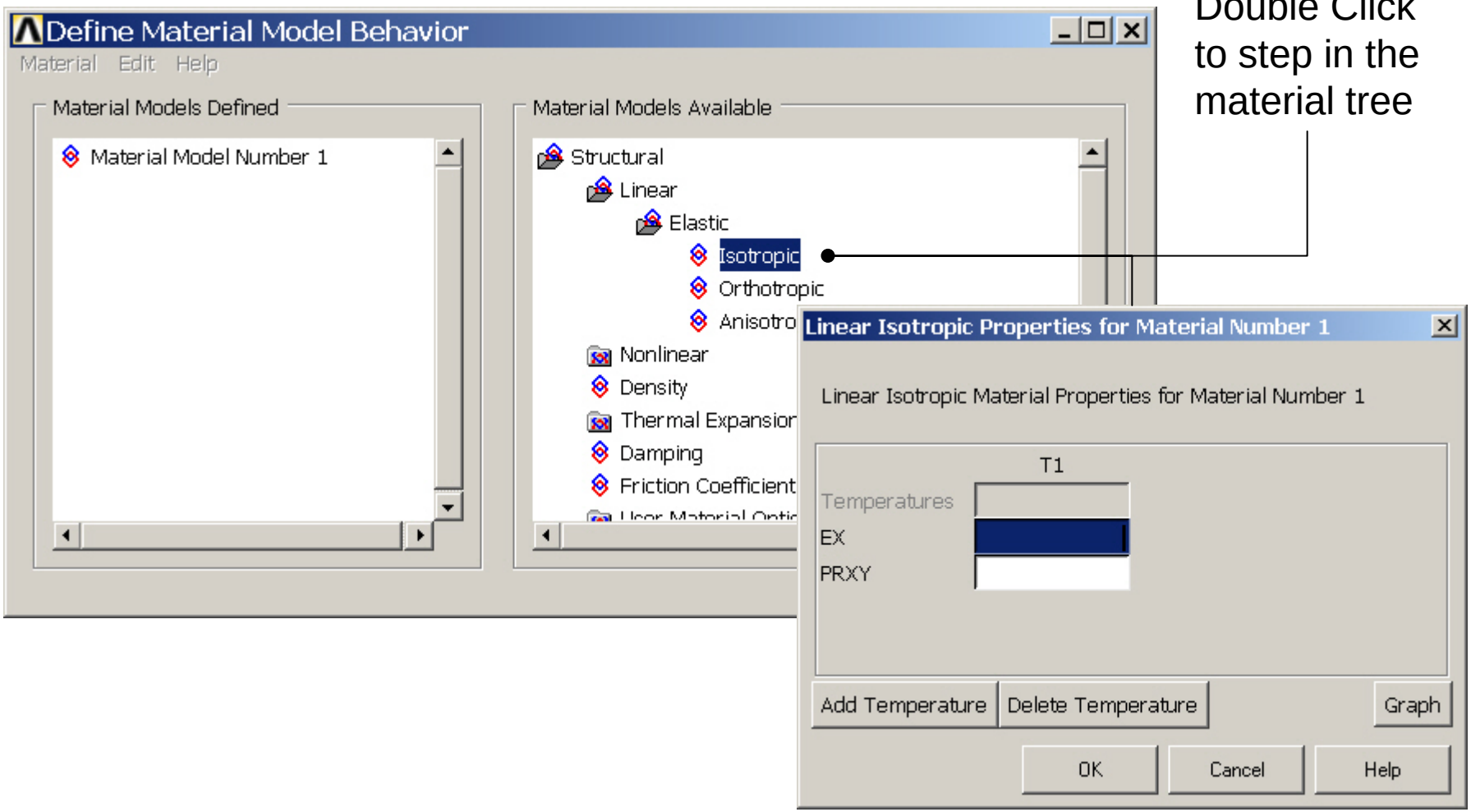
Example - Real Constants

Preprocessor > Real Constants > Add



Example - Material Properties

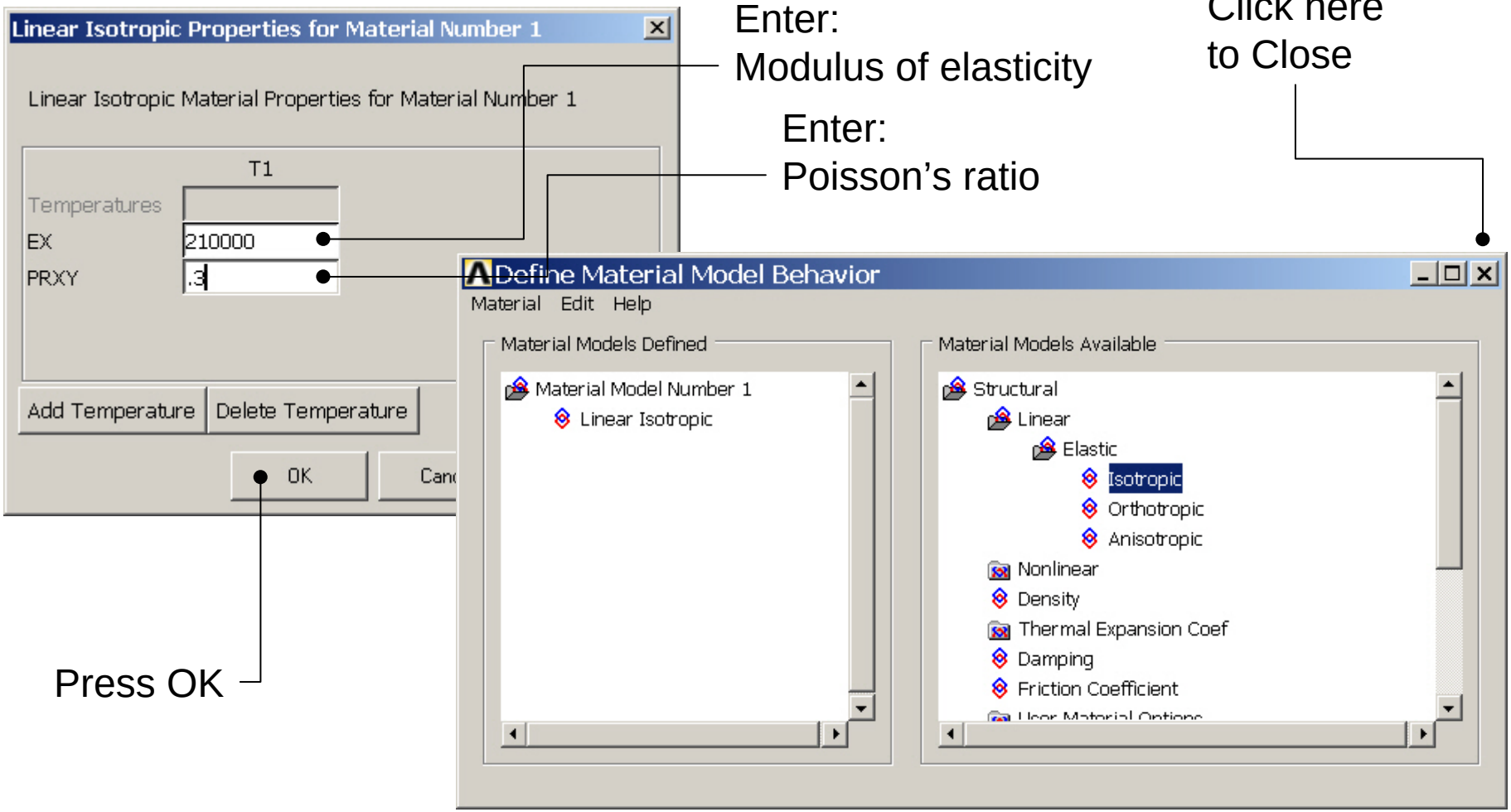
Preprocessor > Material Props > Material Models



Double Click to step in the material tree

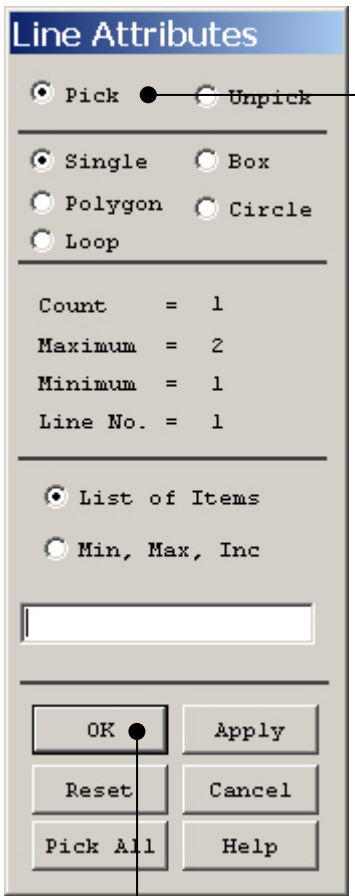
Example - Material Properties

Preprocessor > Material Props > Material Models

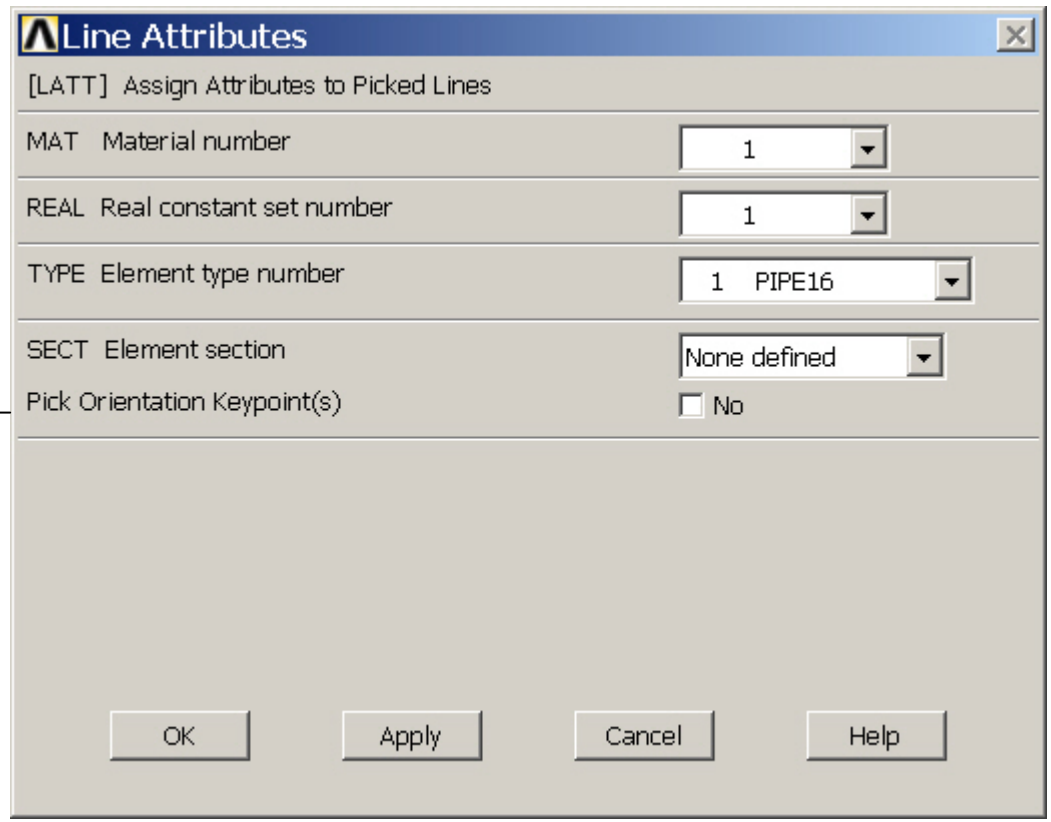


Example – Mesh Attributes

Preprocessor > Meshing > Mesh Attributes > Line Attributes > Picked Lines

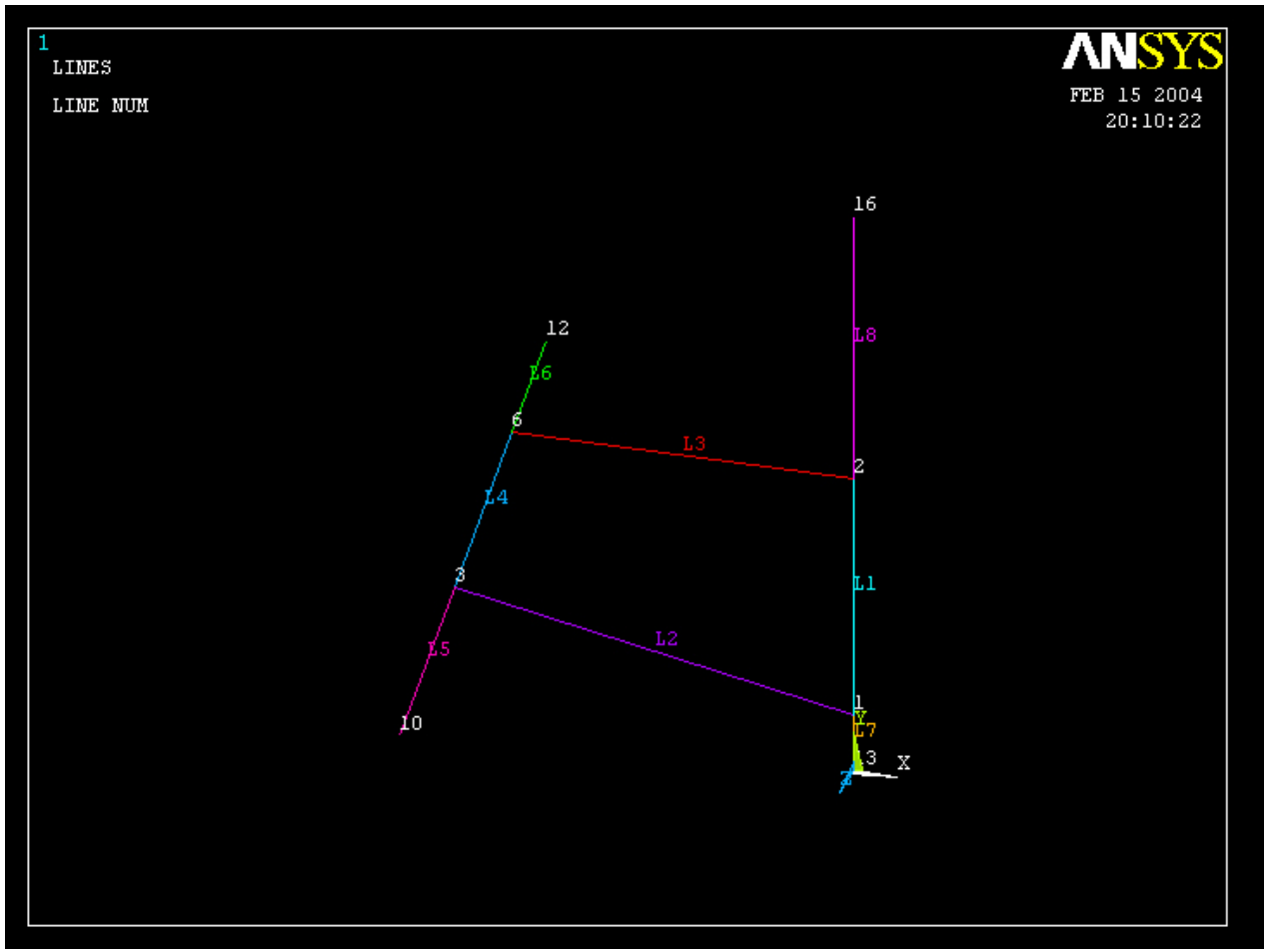


Select Line L7, L1, L8



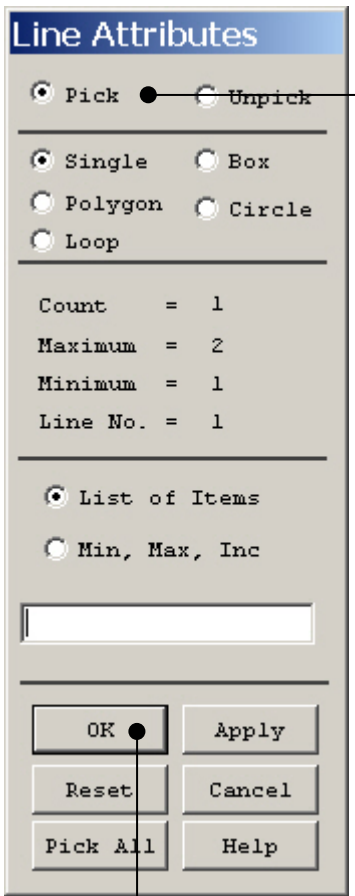
Press OK

Example – Mesh Attributes



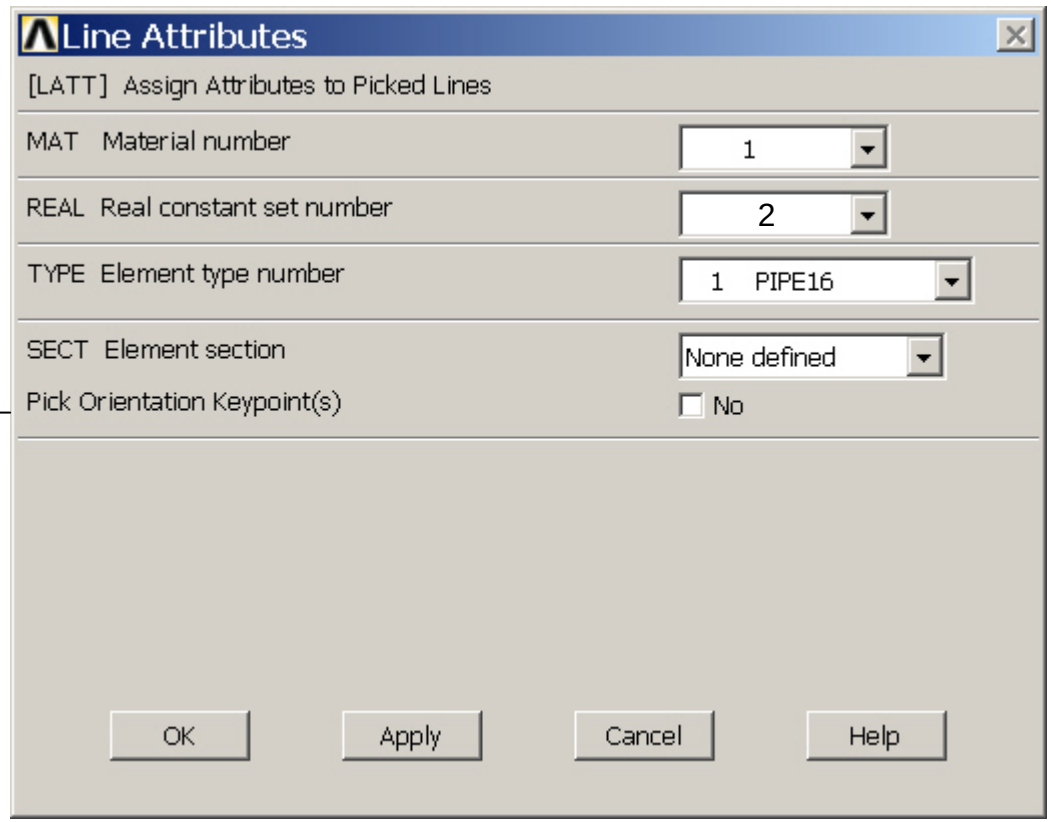
Example – Mesh Attributes

Preprocessor > Meshing > Mesh Attributes > Line Attributes > Picked Lines



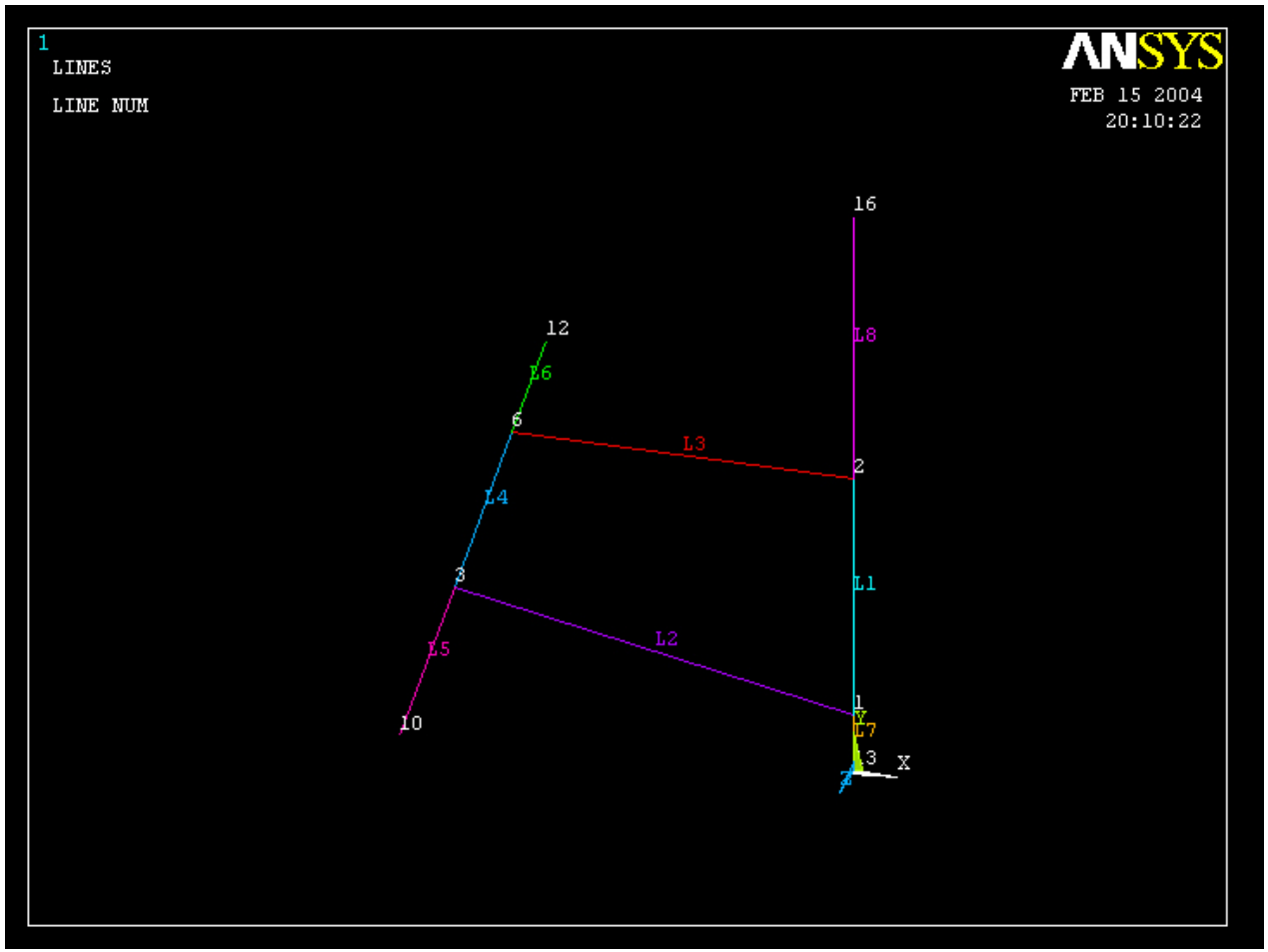
Select Line L5, L4, L6

Change to 2



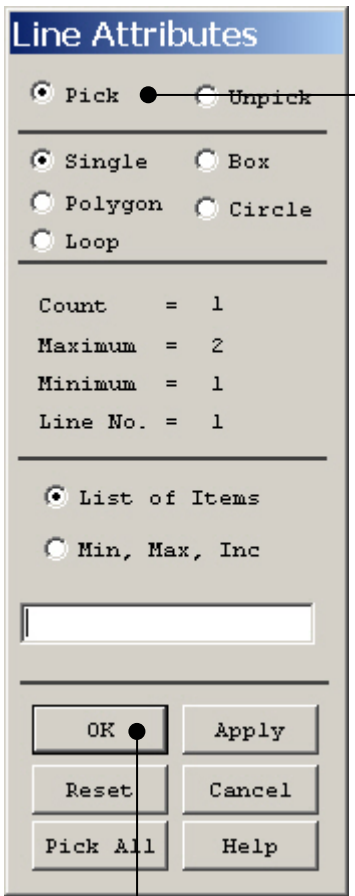
Press OK

Example – Mesh Attributes



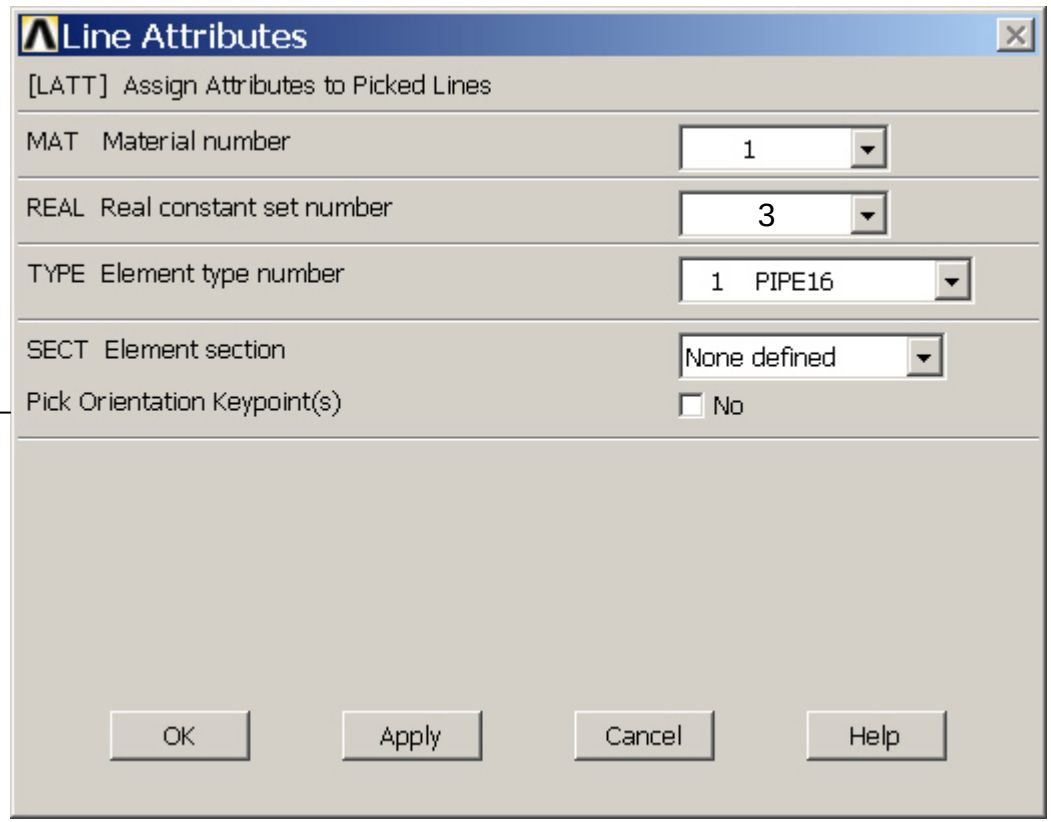
Example – Mesh Attributes

Preprocessor > Meshing > Mesh Attributes > Line Attributes > Picked Lines



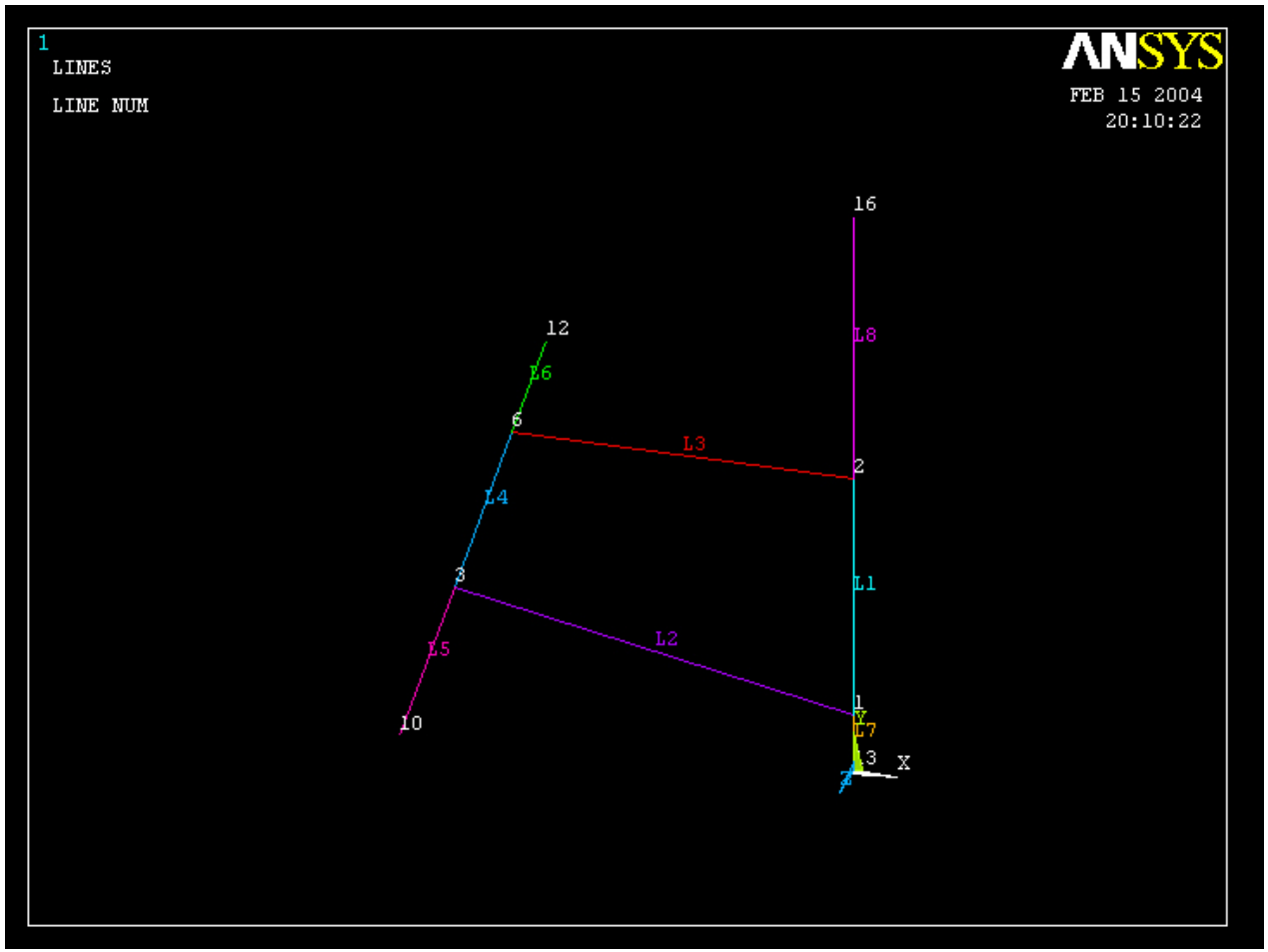
Select Line L2

Change to 3



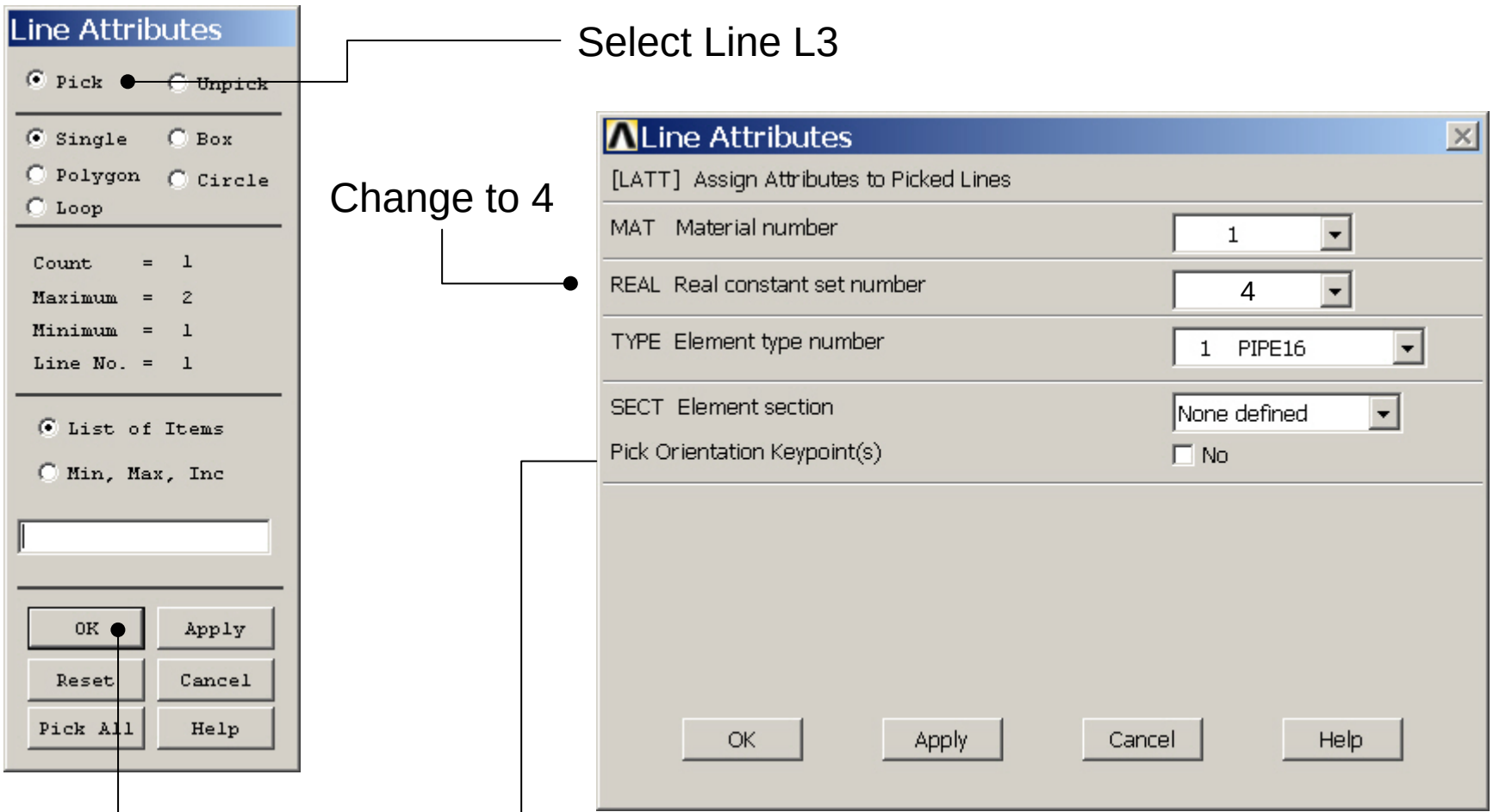
Press OK

Example – Mesh Attributes

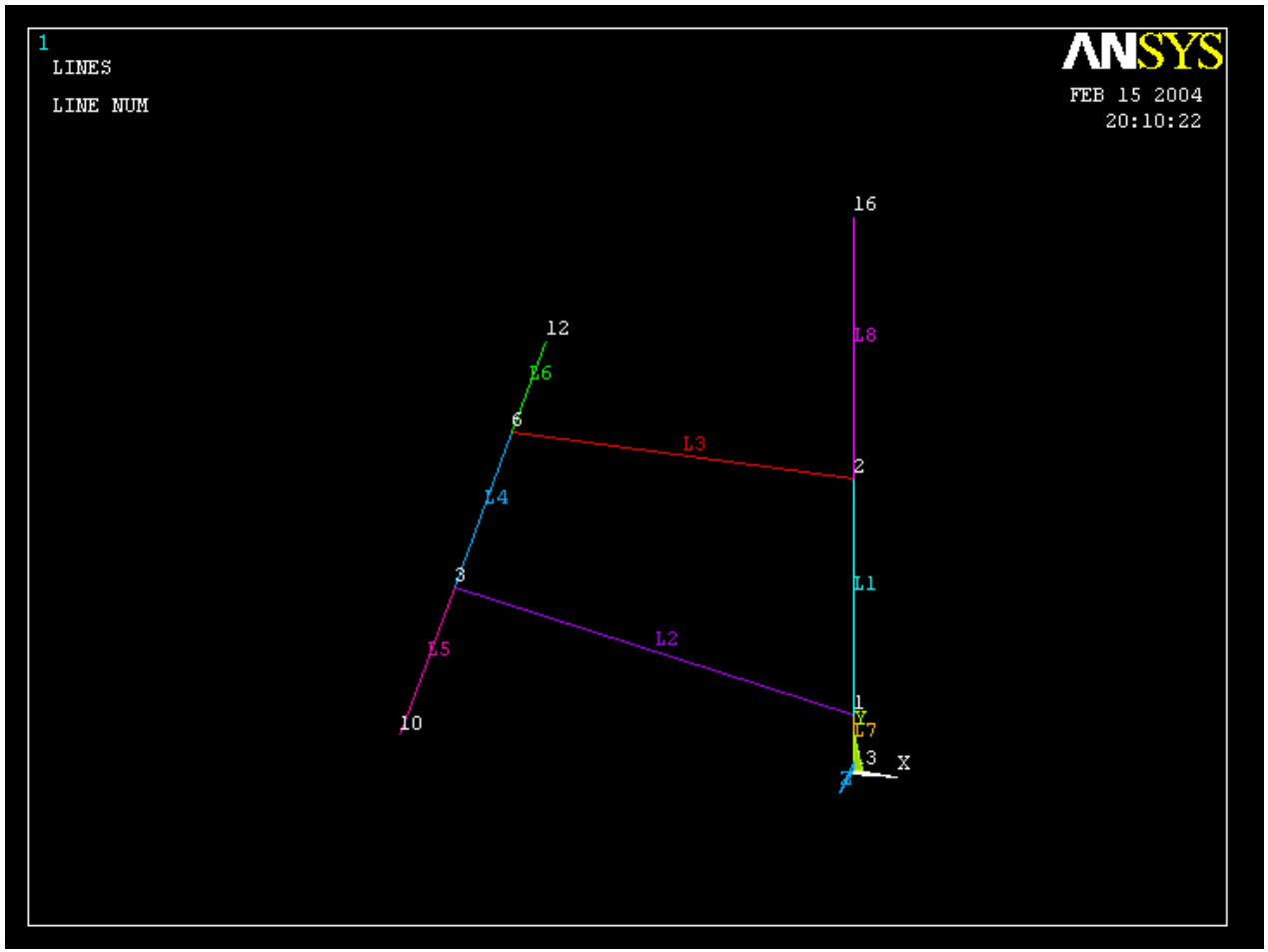


Example – Mesh Attributes

Preprocessor > Meshing > Mesh Attributes > Line Attributes > Picked Lines

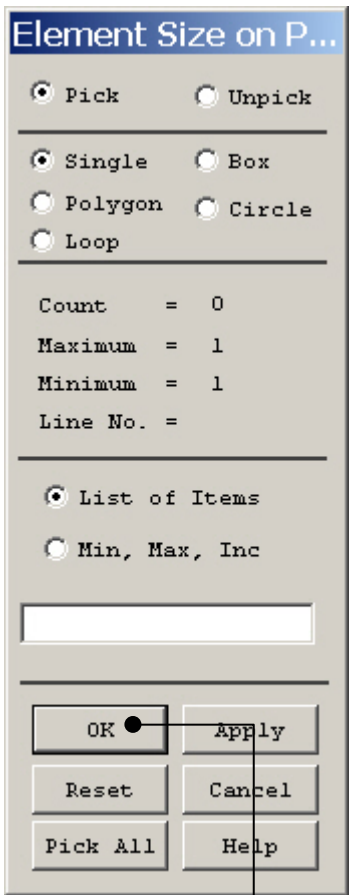


Example – Mesh Attributes

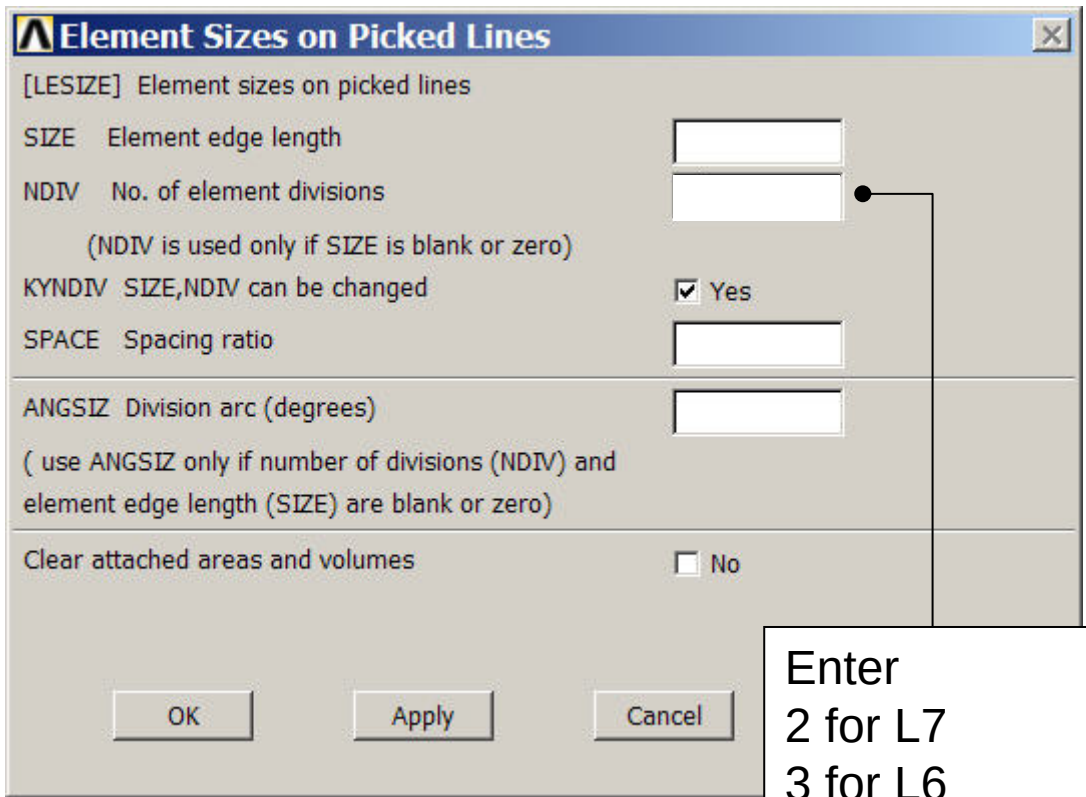


Example - Meshing

Preprocessor > Meshing > Size Cntrls > ManualSize > Lines > Picked Lines



Select/Pick Lines to specify mesh size for

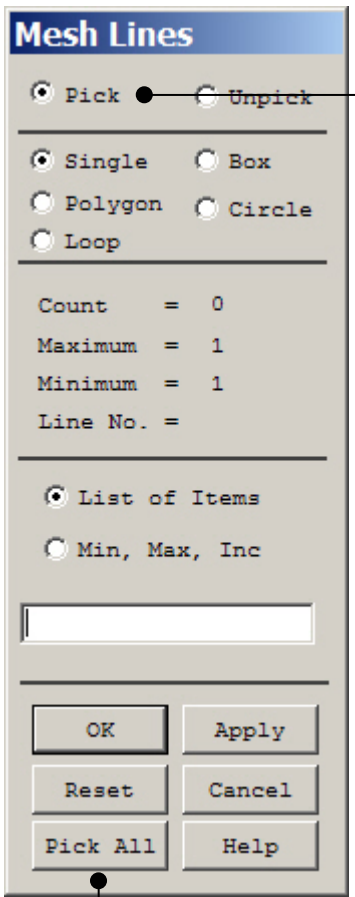


Enter
2 for L7
3 for L6
4 for L1,L4,L5
5 for L8

Press OK when finish with selection

Example - Meshing

Preprocessor > Meshing > Mesh > Lines

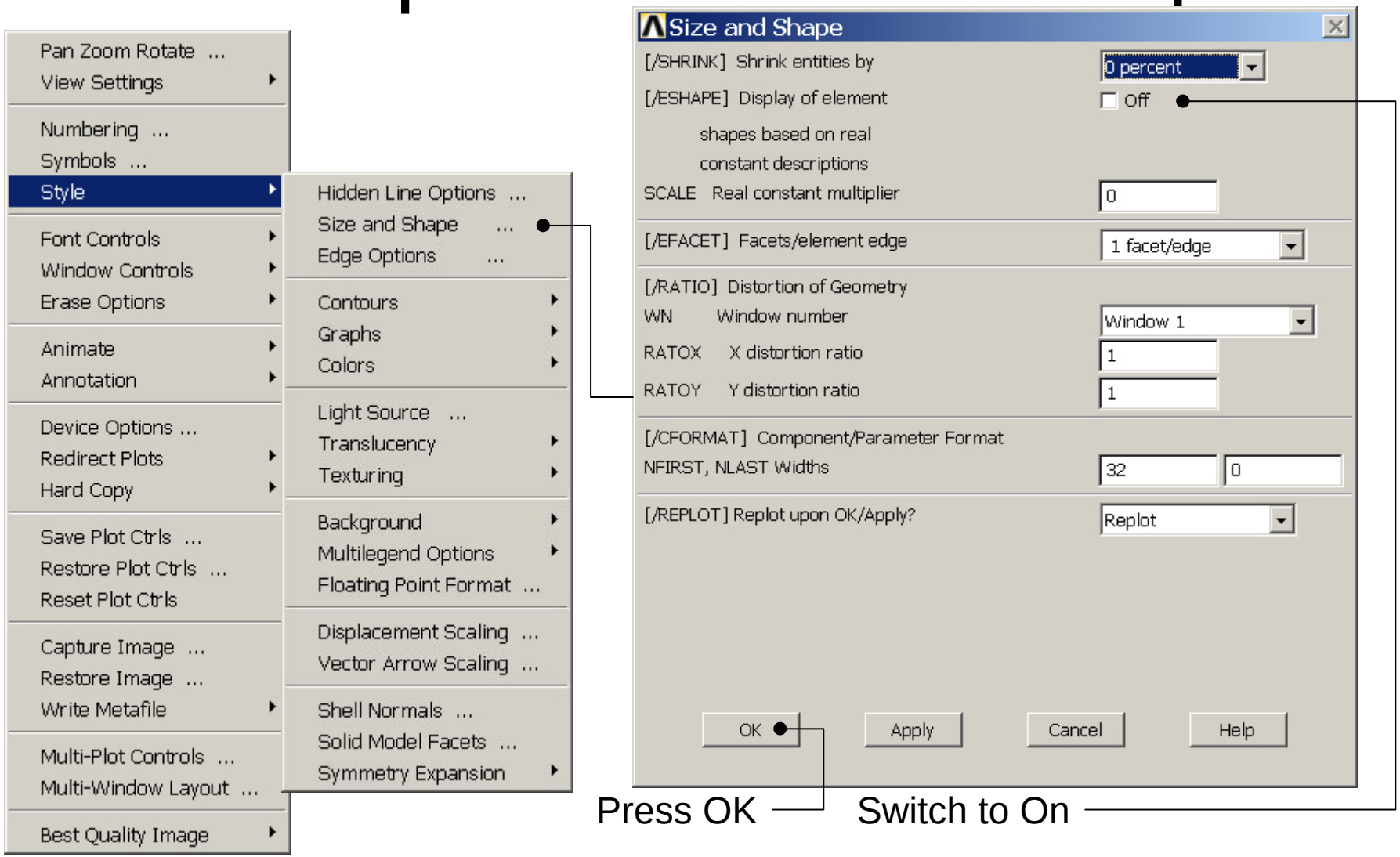


Select individual lines to be meshed by Picking

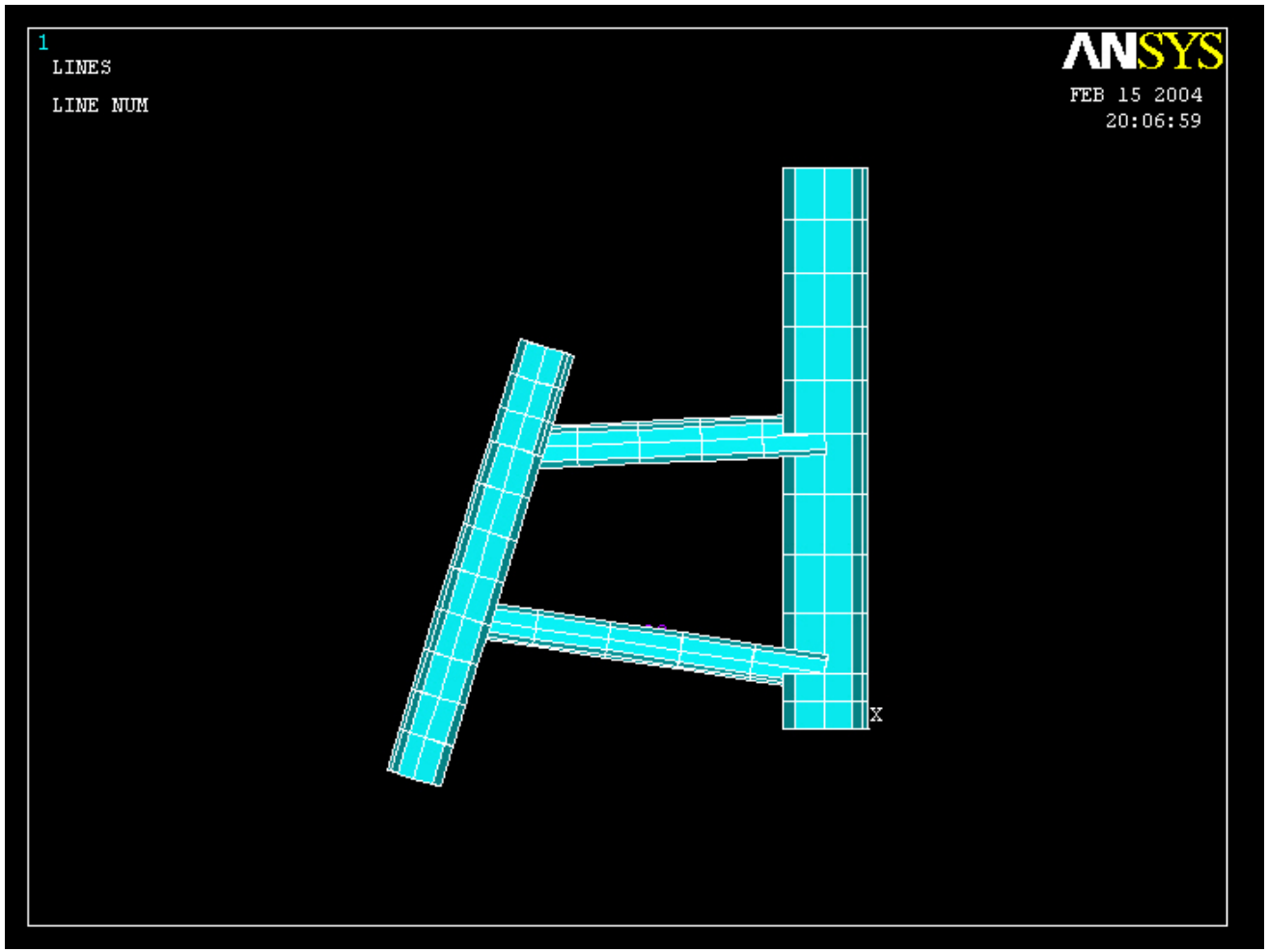
NB: It is often necessary to “Clear” the model for example if Element Type is to be changed

Select all lines defined to be meshed

Example – Size and Shape



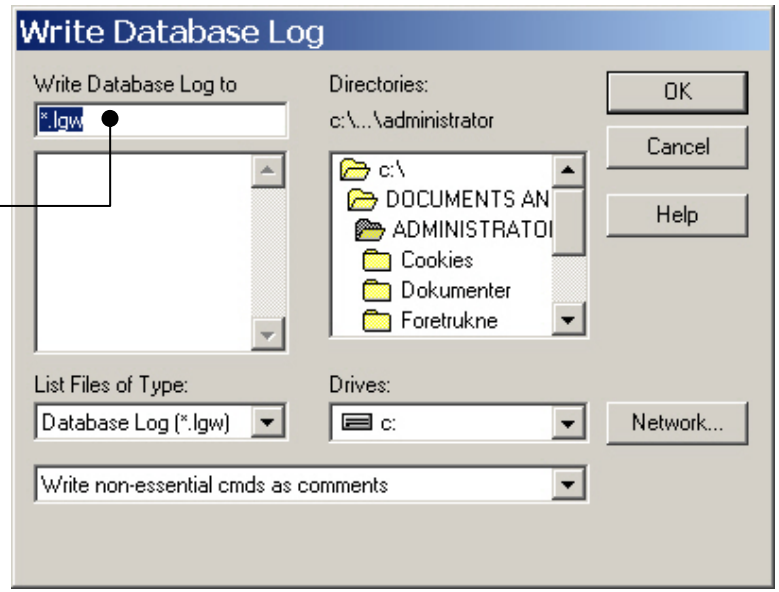
Example – Display of element



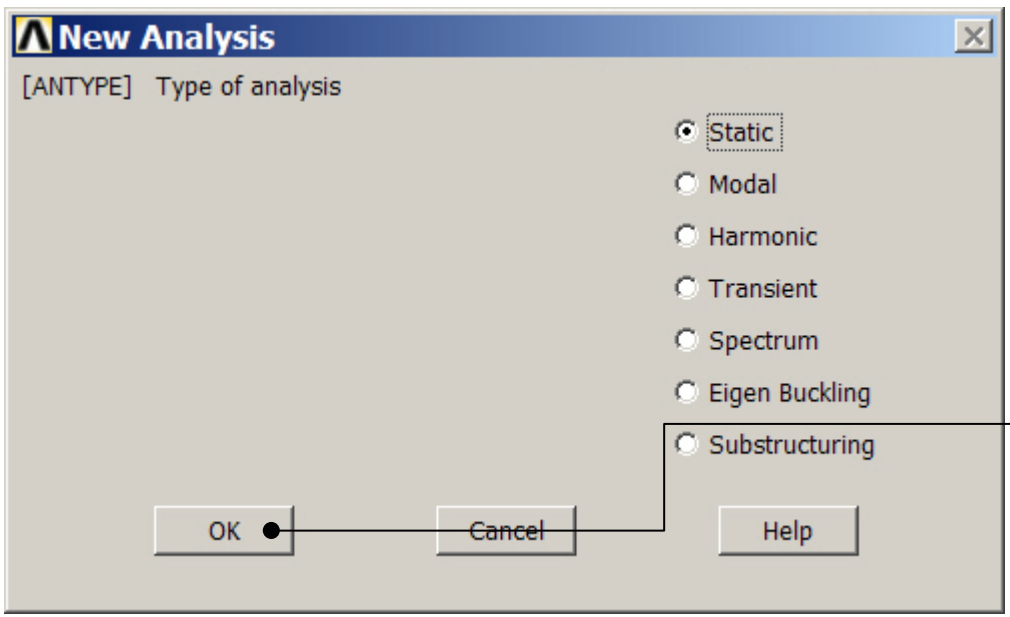
Example – Analysis Type

File > Write DB log file

Enter “example0153.lgw”



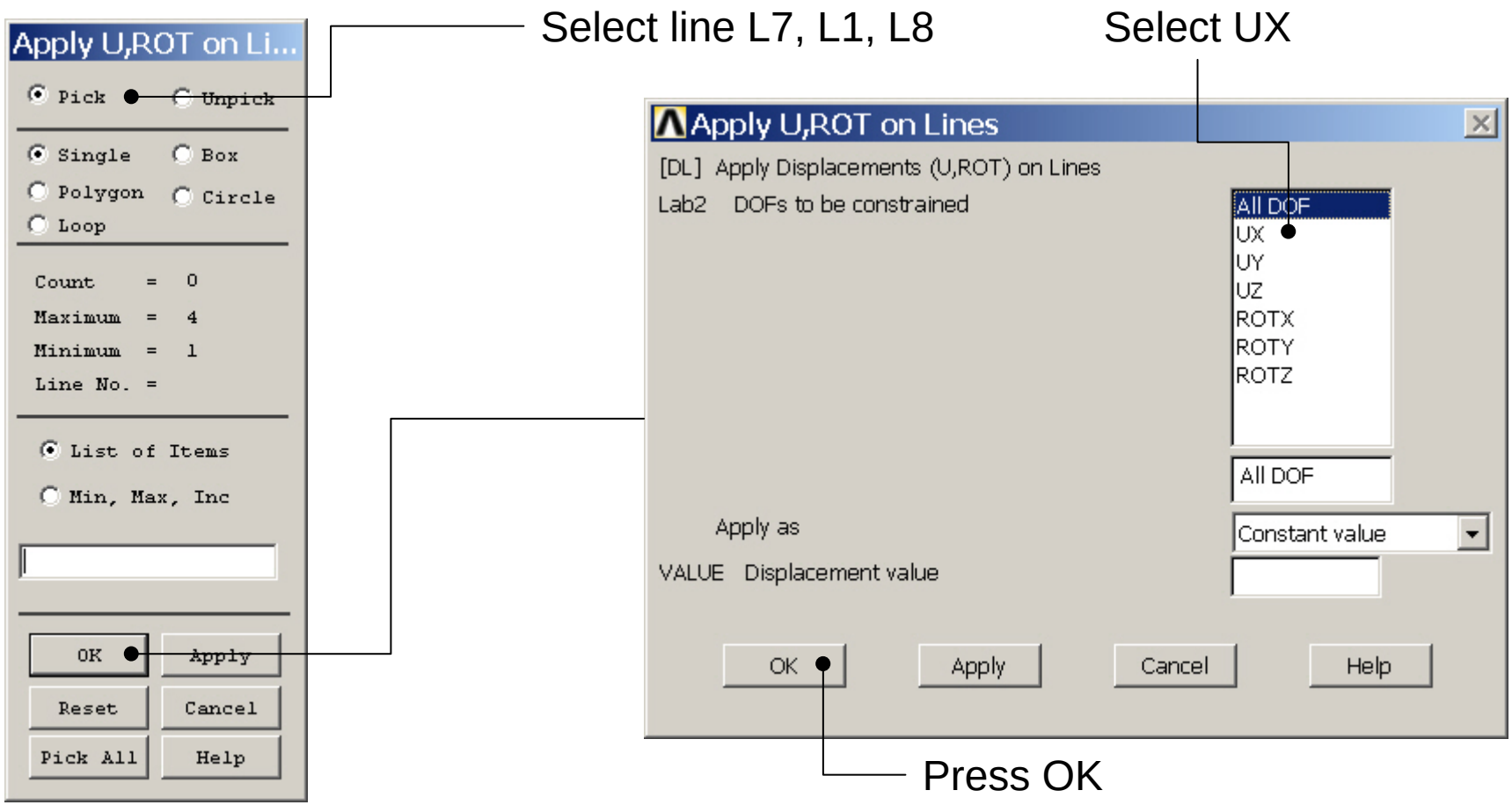
Solution > Analysis Type > New Analysis



Press OK

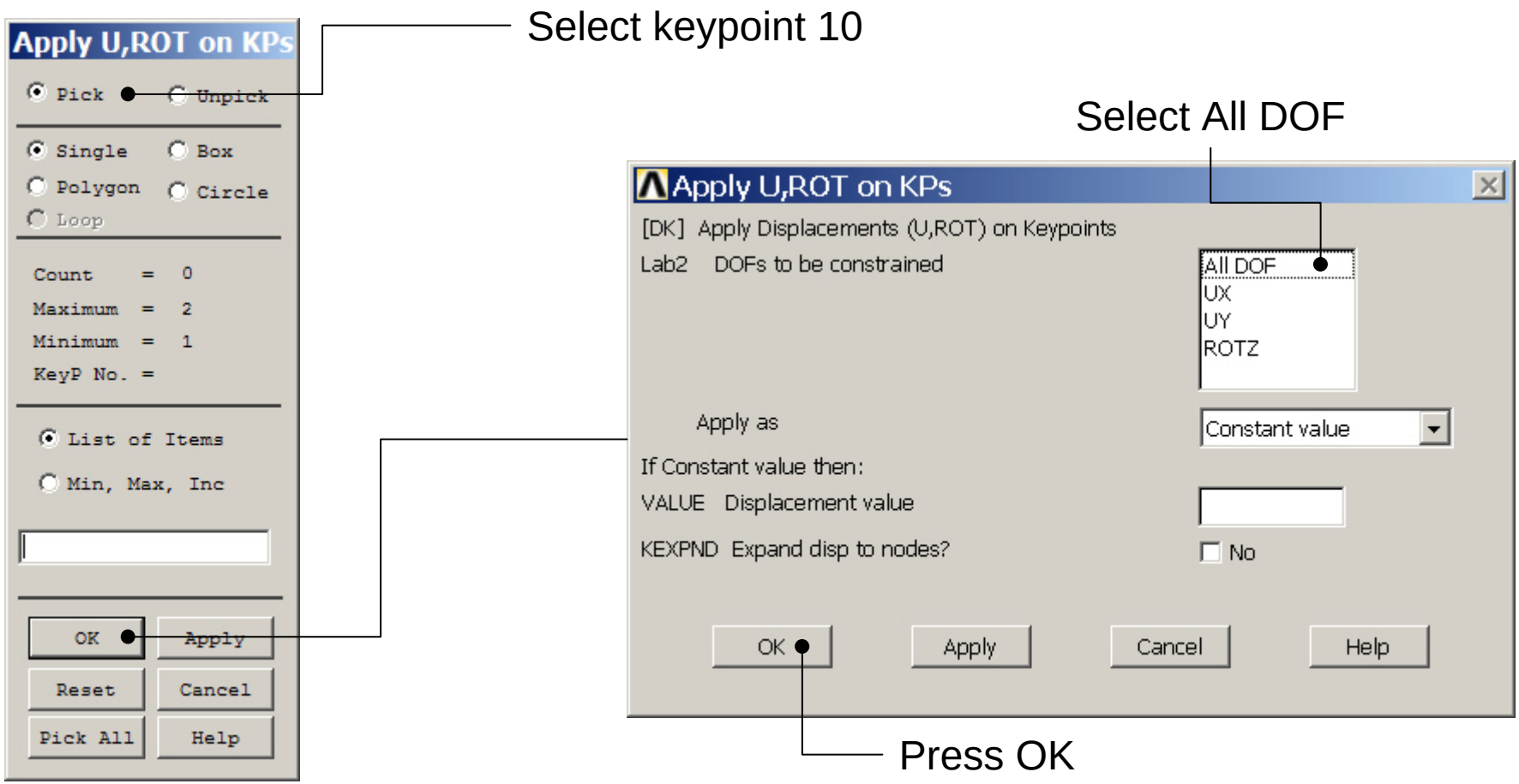
Example – Define Loads

Solution > Define Loads > Apply > Structural > Displacement > On Lines



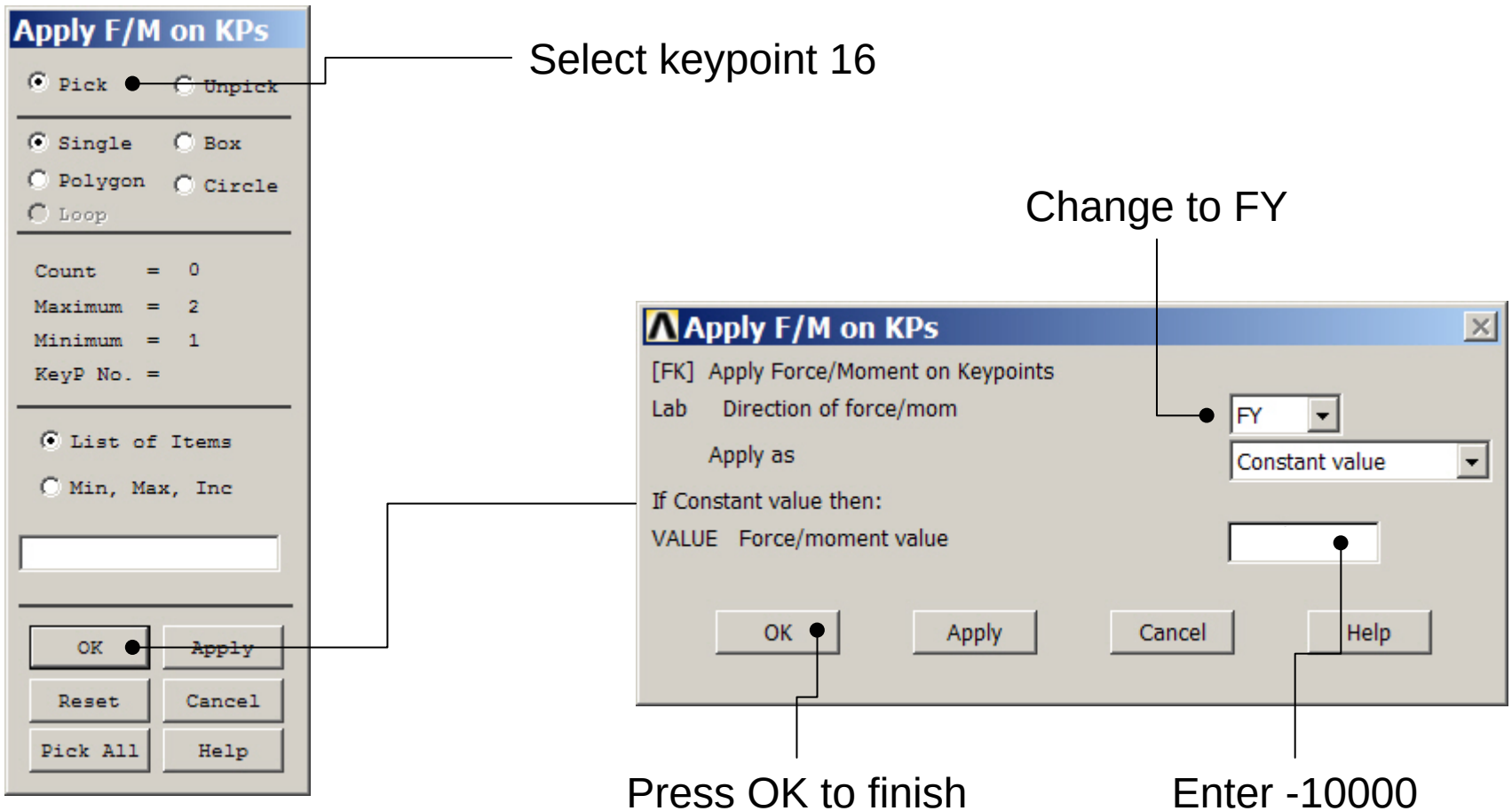
Example – Define Loads

Solution > Define Loads > Apply > Structural > Displacement > On Keypoints

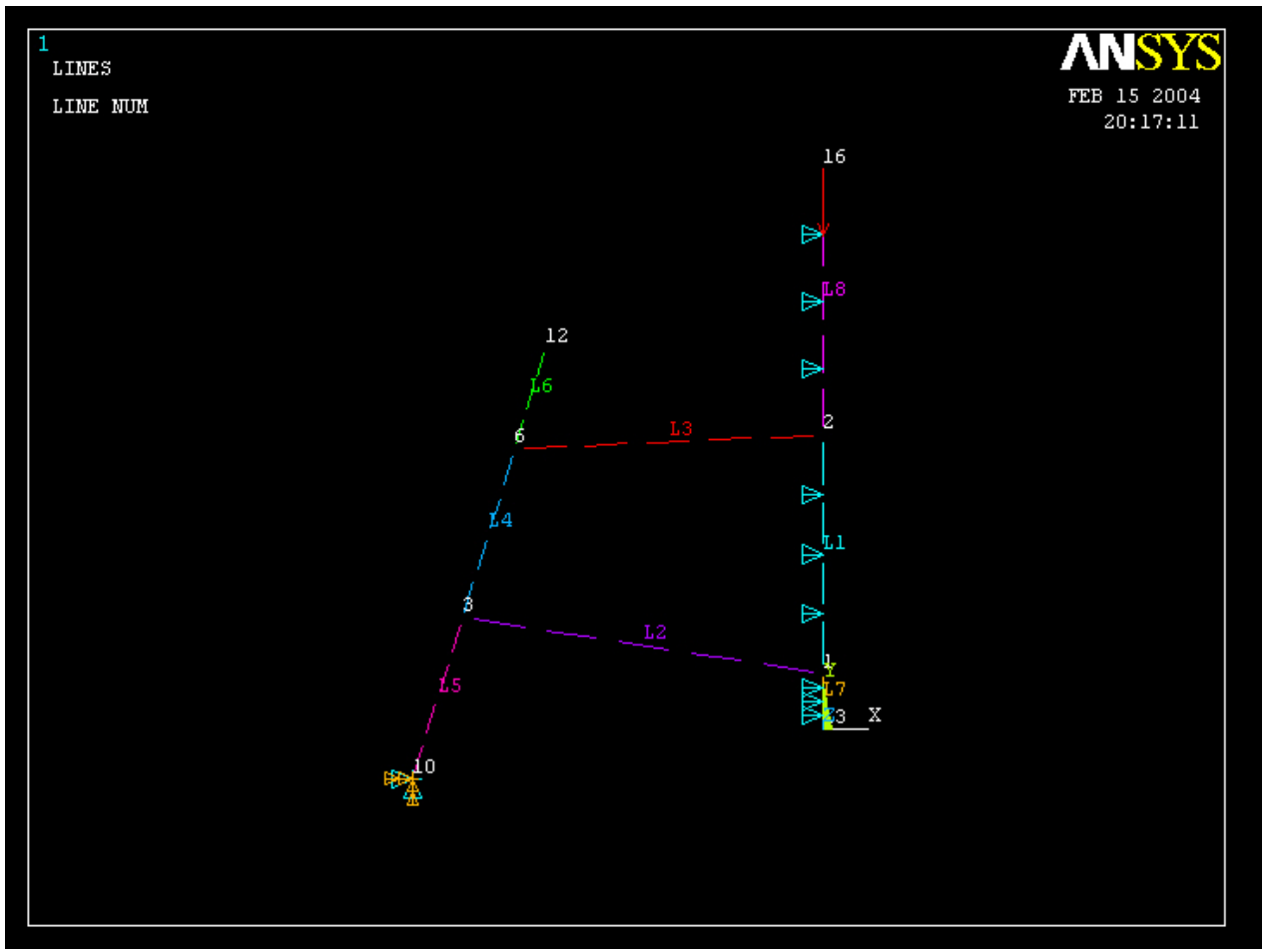


Example – Define Loads

Solution > Define Loads > Apply > Structural > Force/Moment > On Keypoints

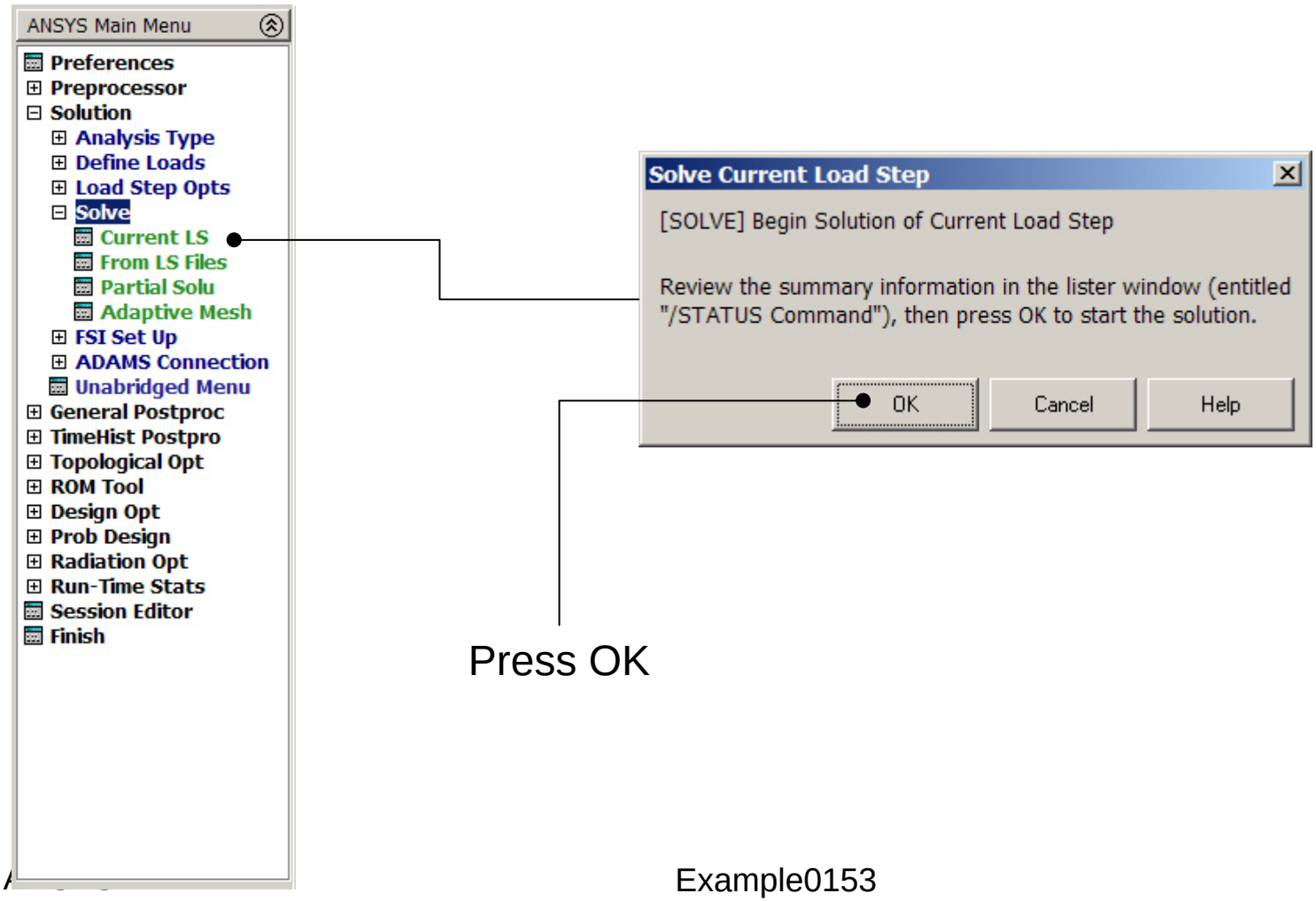


Example – Boundary Conditions



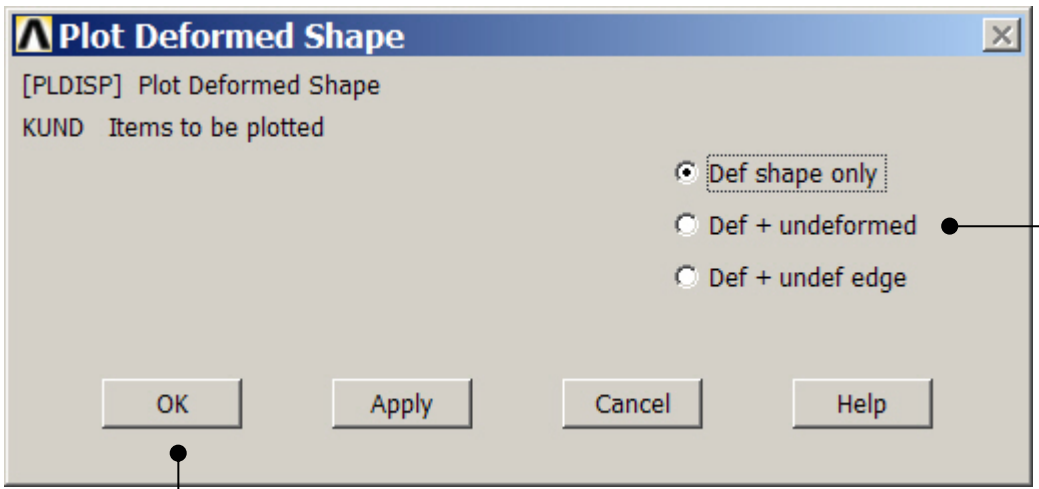
Example - Solve

Solution > Solve > Current LS



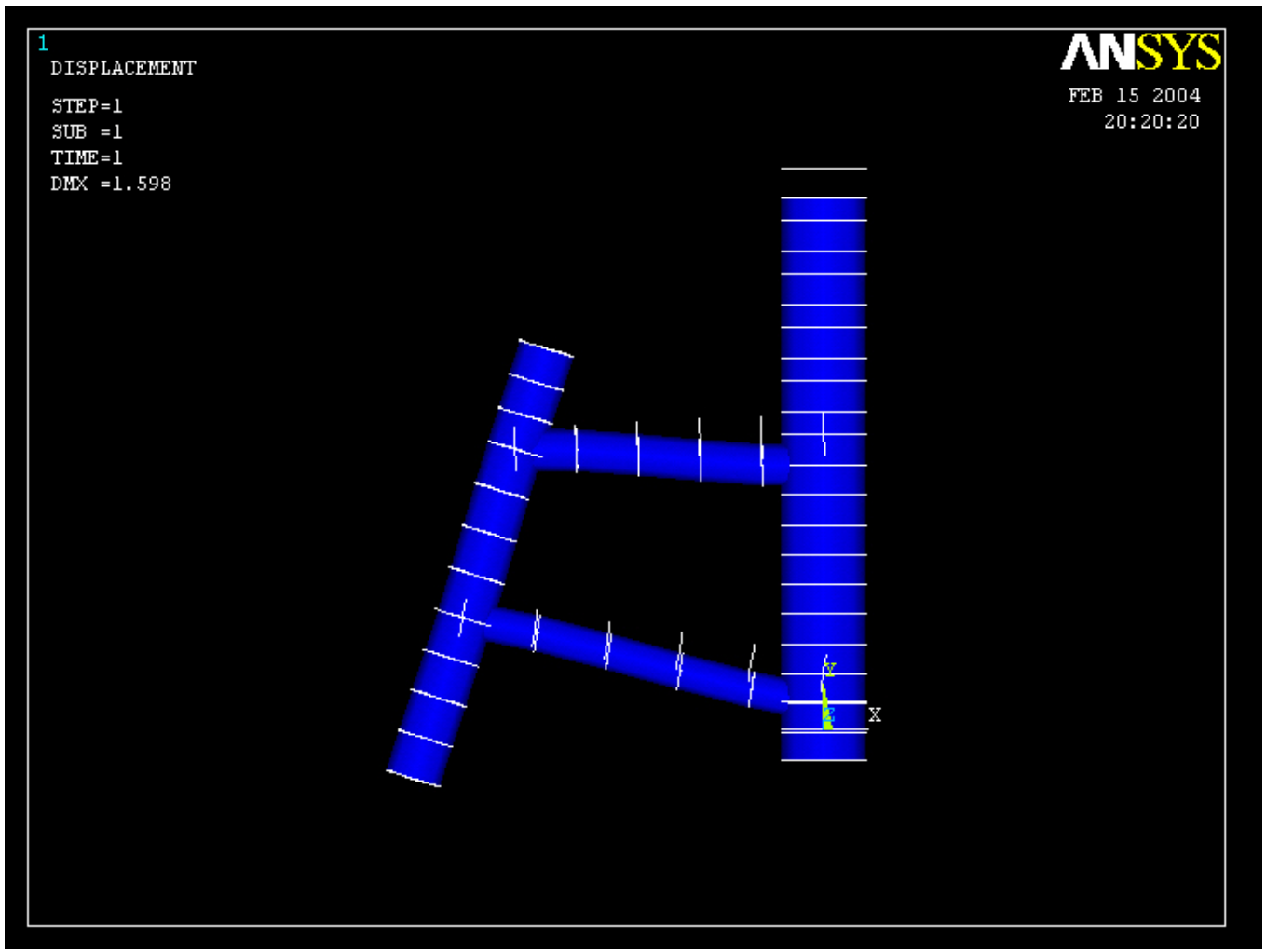
Example - PostProcessing

General Postproc > Plot Results > Deformed Shape

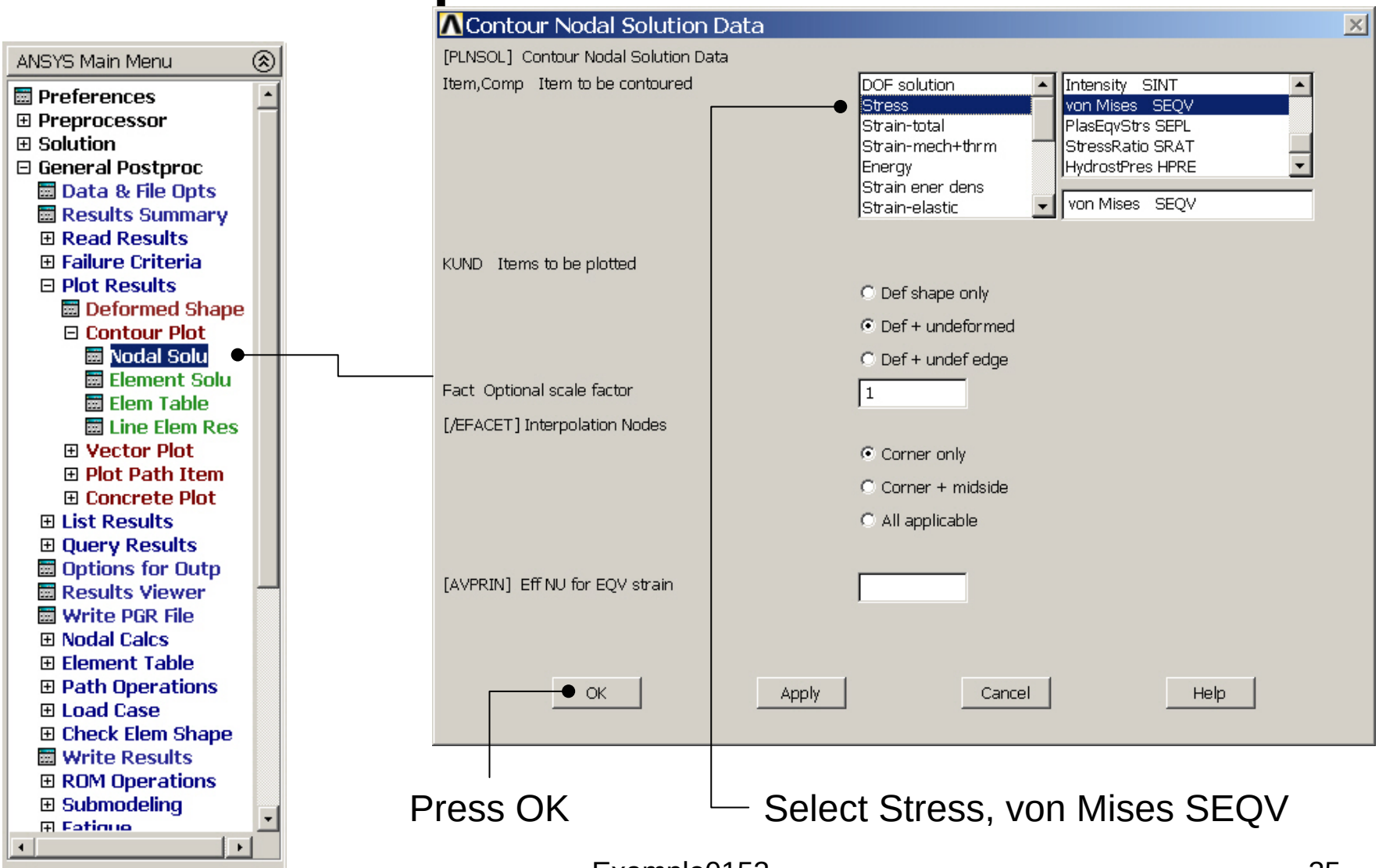


Select “Def+undeformed” and Press OK

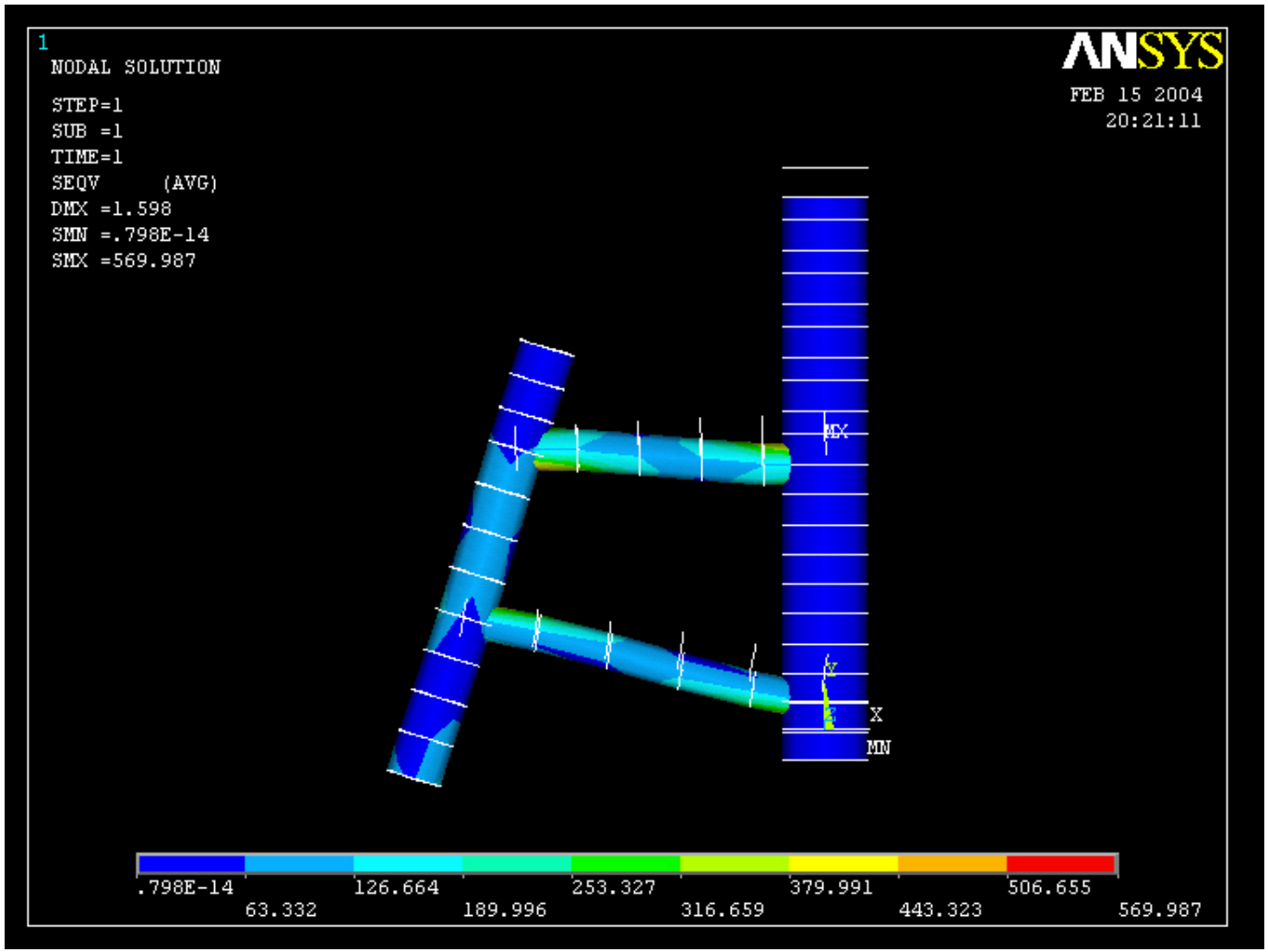
Example – Deformed Shape



Example – Contour Plot



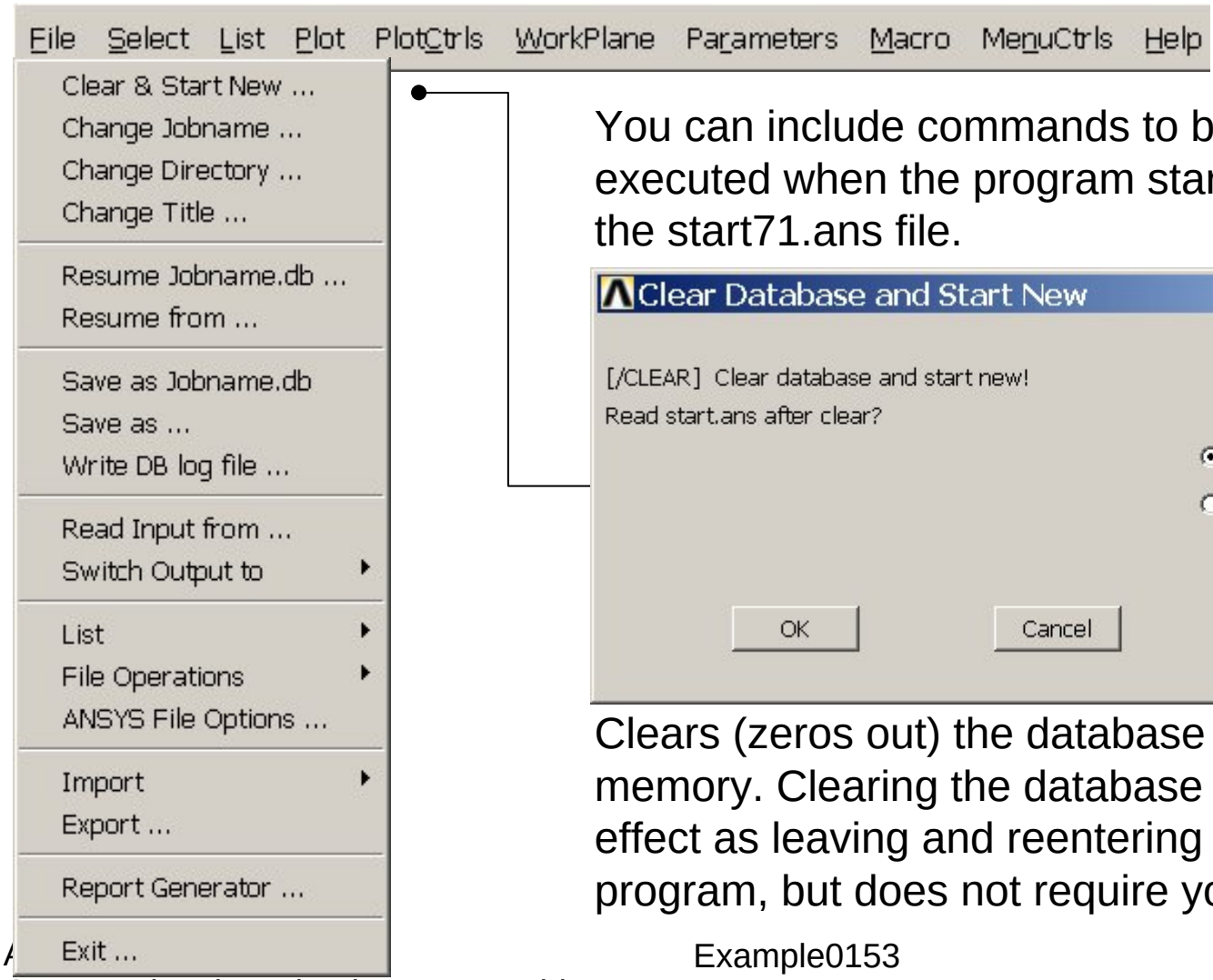
Example – Contour Plot



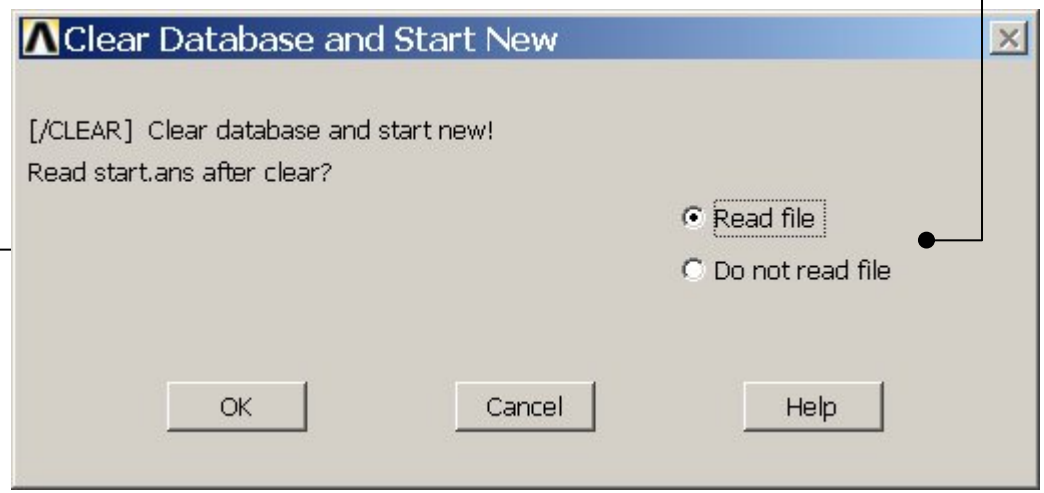
Example – Comments/Questions

- Could the model be modeled with beam elements instead of pipe elements?
- The “example0153.lgw” can be edited in “Notepad”
- Will the number of elements affect the solution?

File menu



You can include commands to be executed when the program starts up in the start71.ans file.



Clears (zeros out) the database stored in memory. Clearing the database has the same effect as leaving and reentering the ANSYS program, but does not require you to exit.