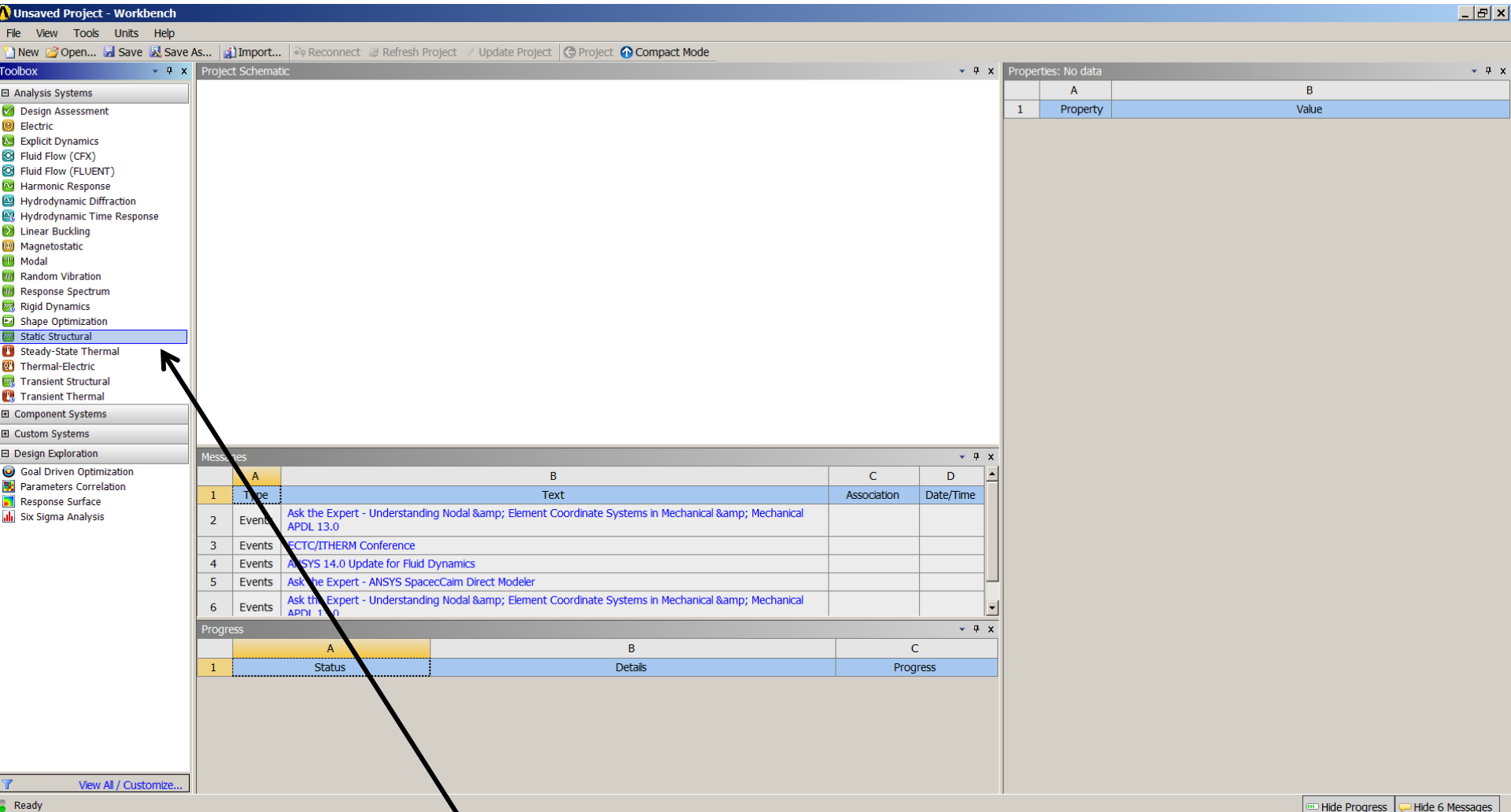Optimization of a beam
Workbench 14.0

Aalborg Universitet esbjerg
Søren Heide Lambertsen

Click on Static structural

Click on Geometry

Chose Millimeter and click OK
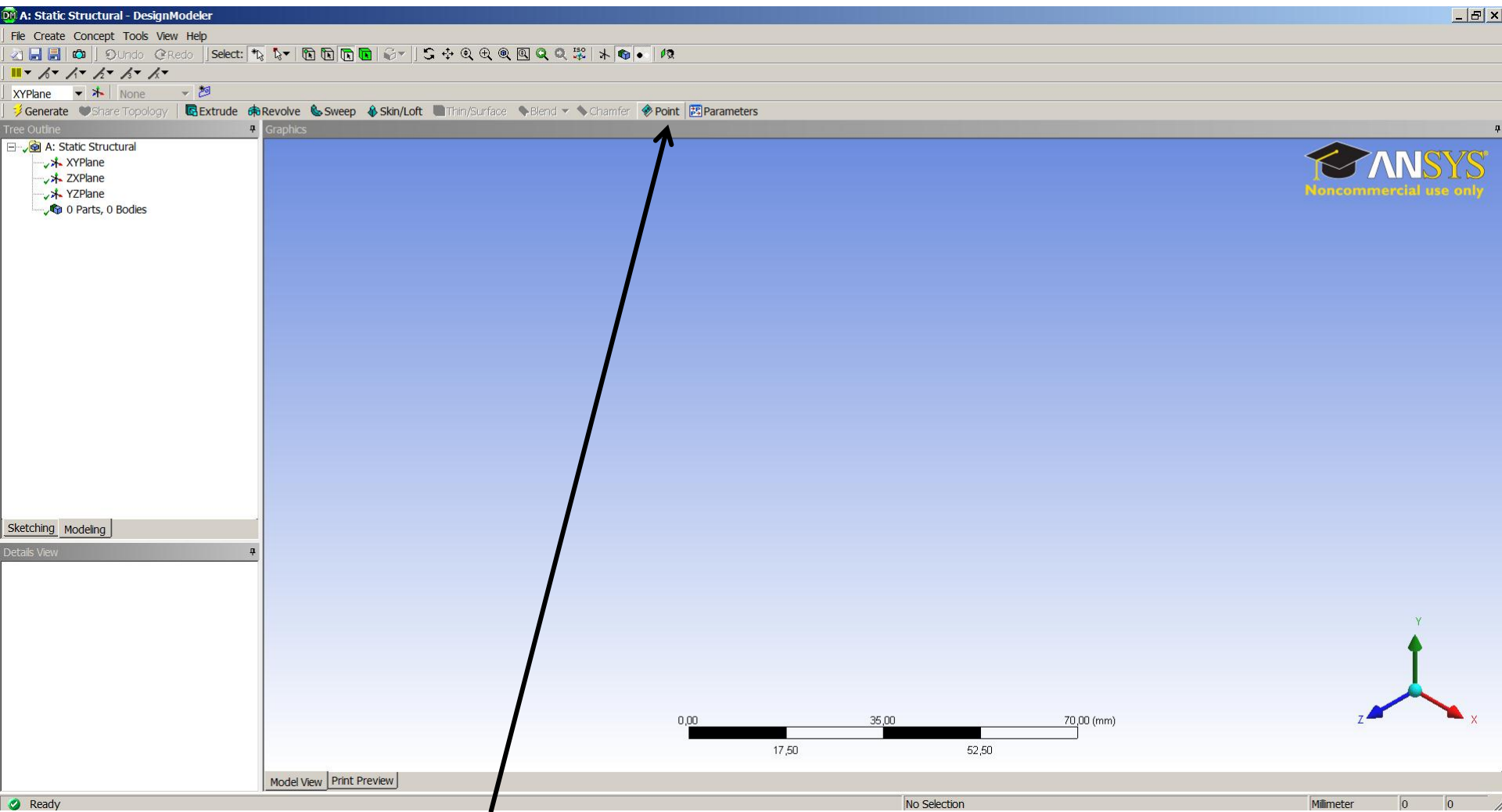
Click on Point

Select Manual input

Click generate

Insert a new Point 1

Then insert the point 2 at x=500mm

Insert a point again and set x=1000

Then select lines from points

Select point 1 and hold the ctrl bottom down and
select point 2 and click generate.
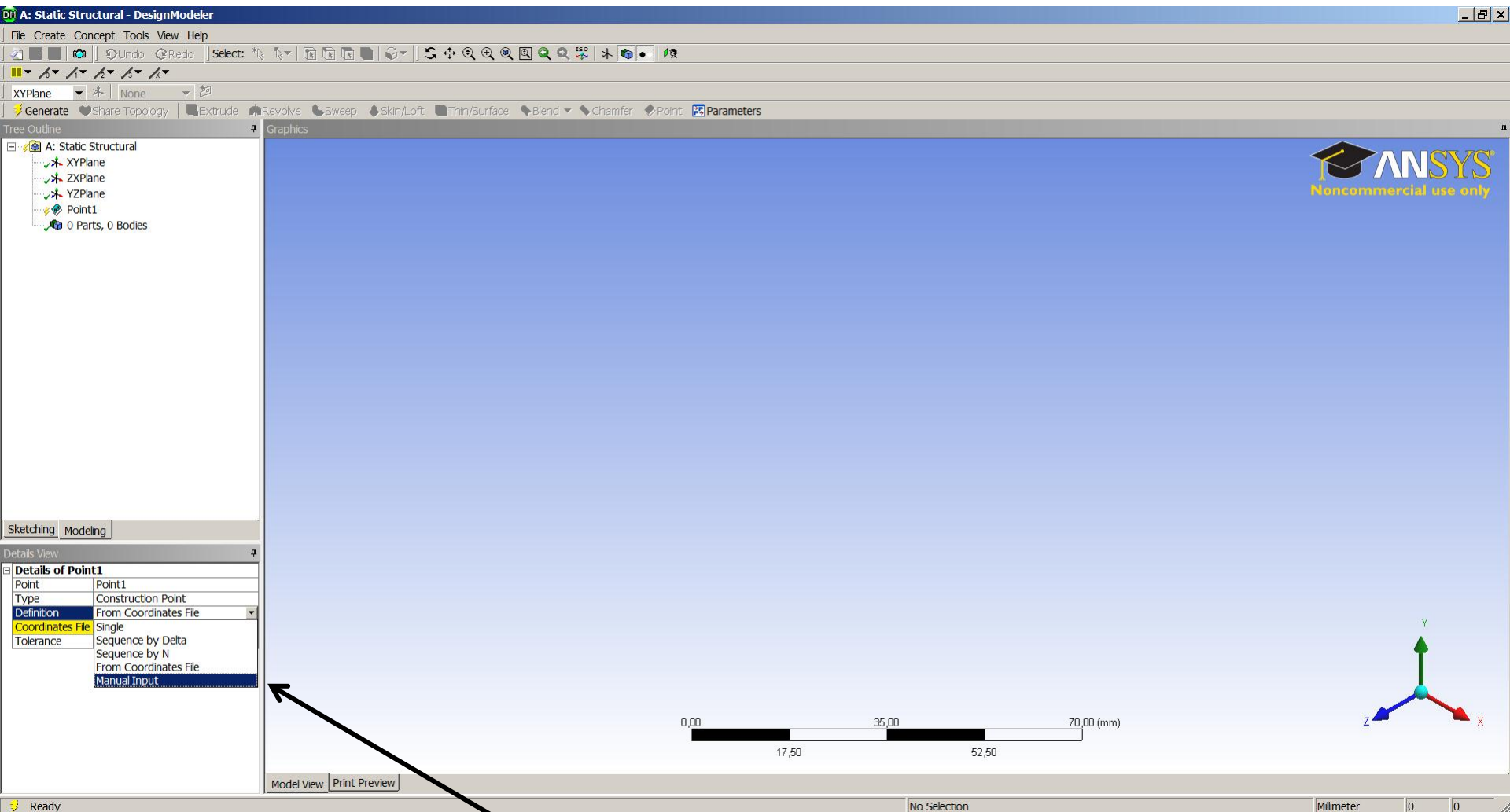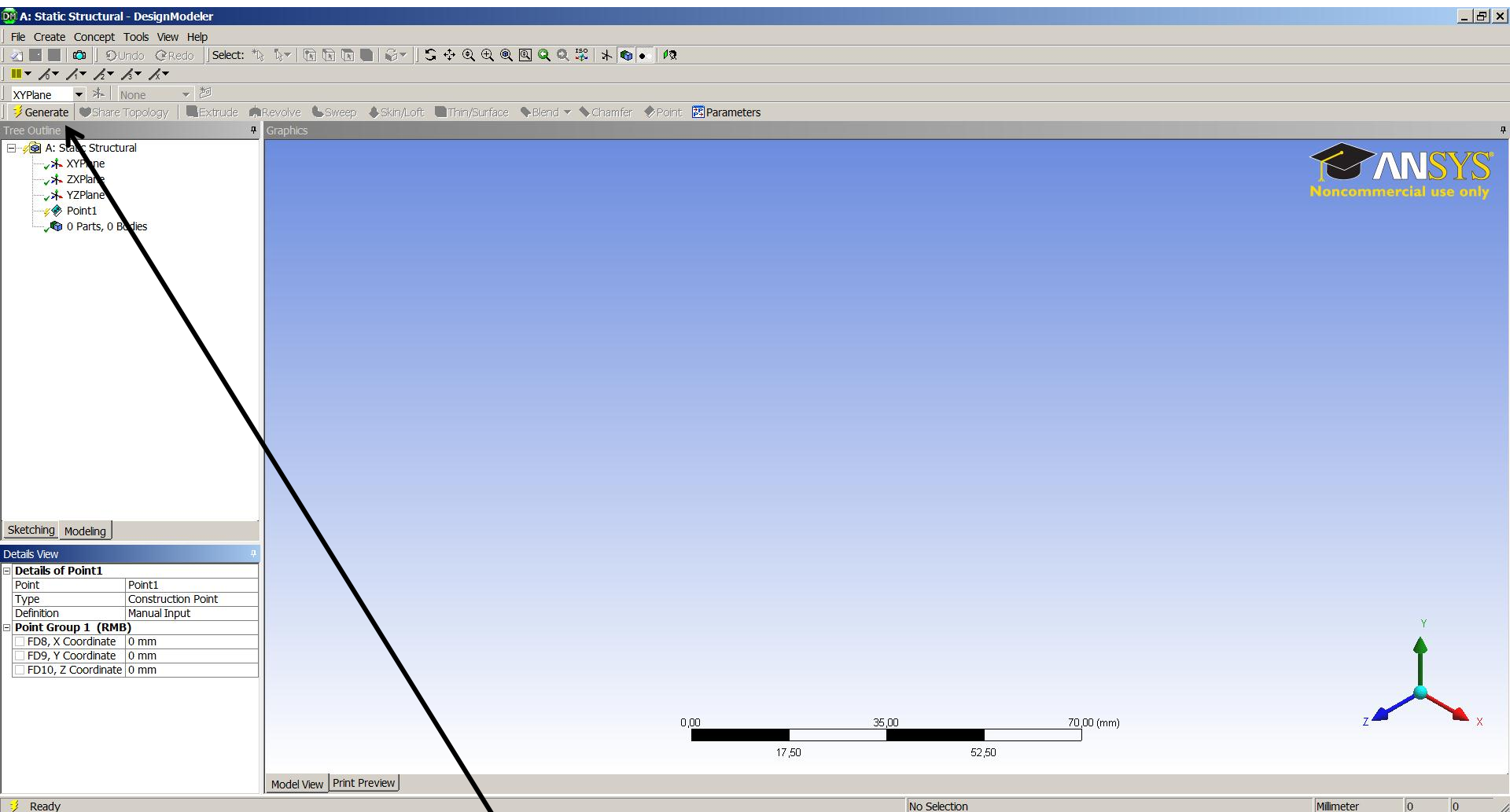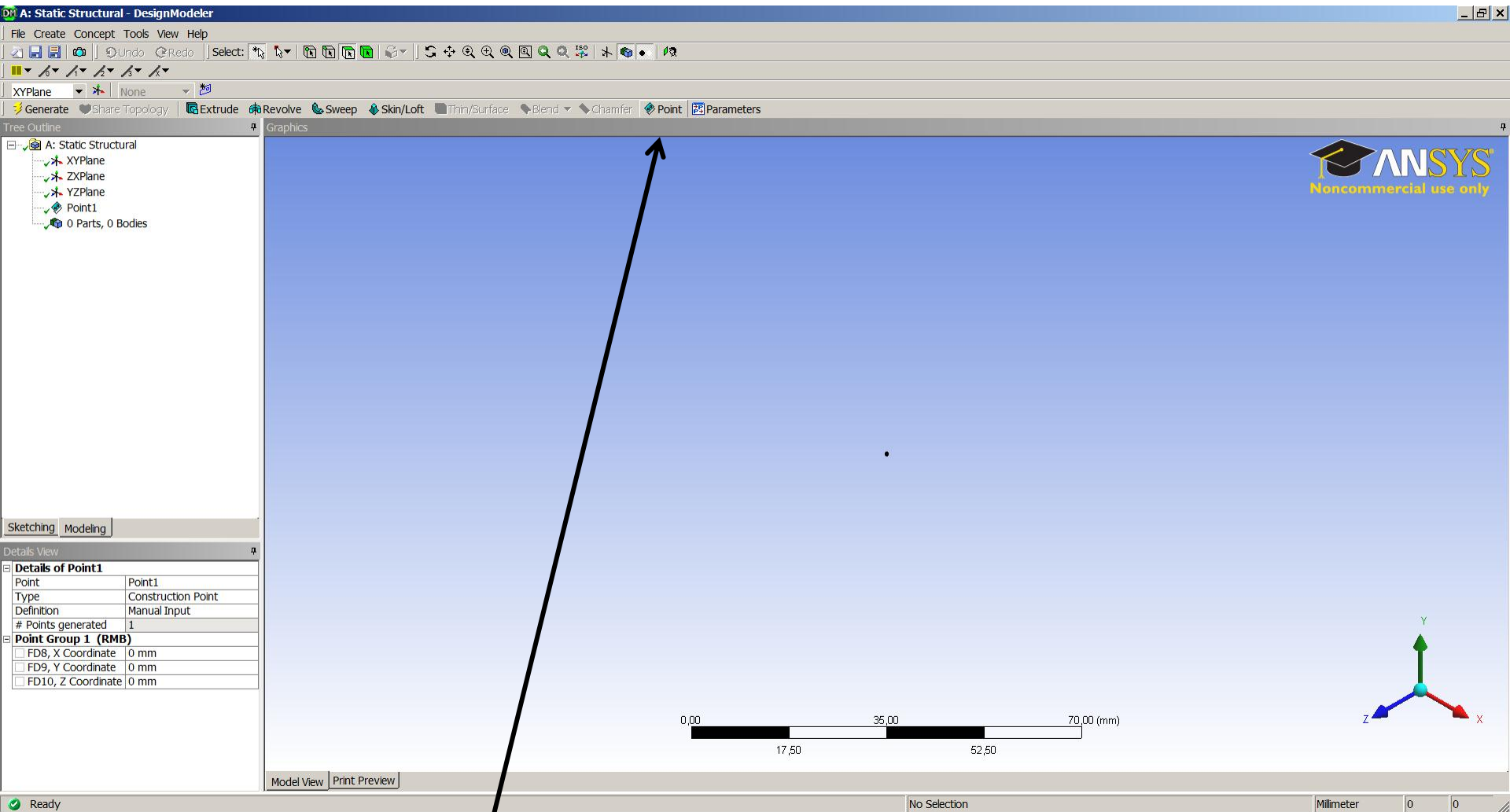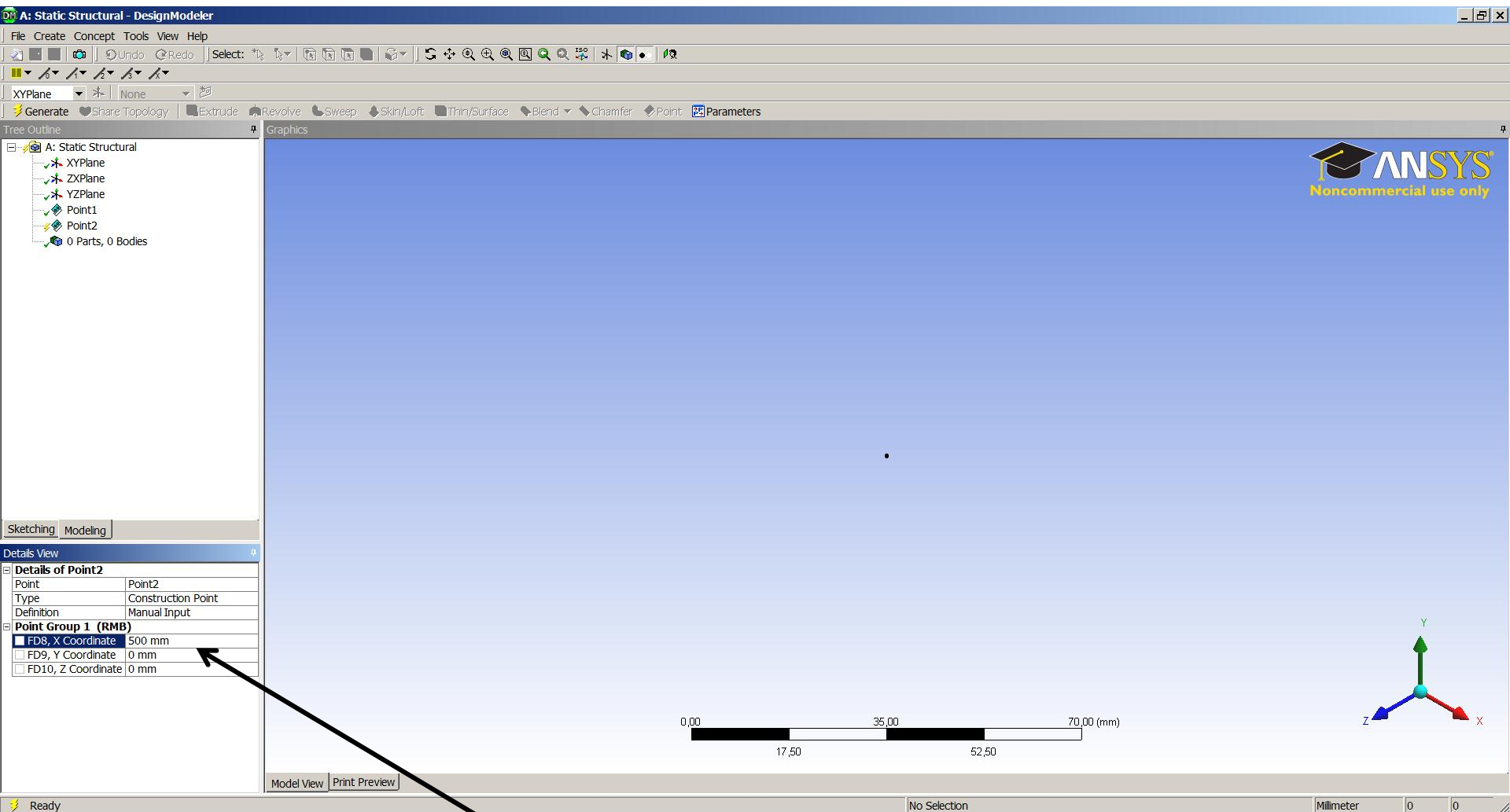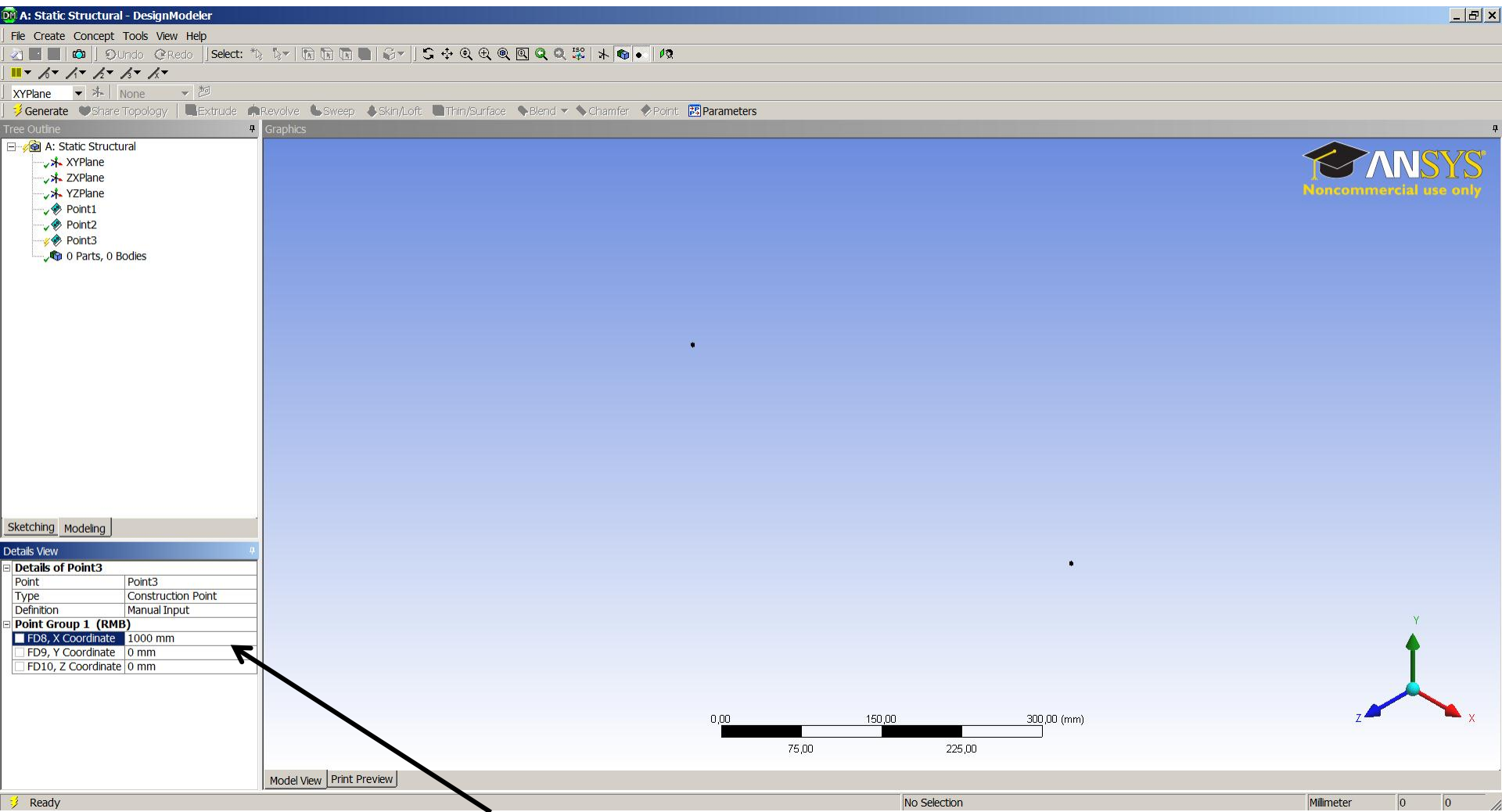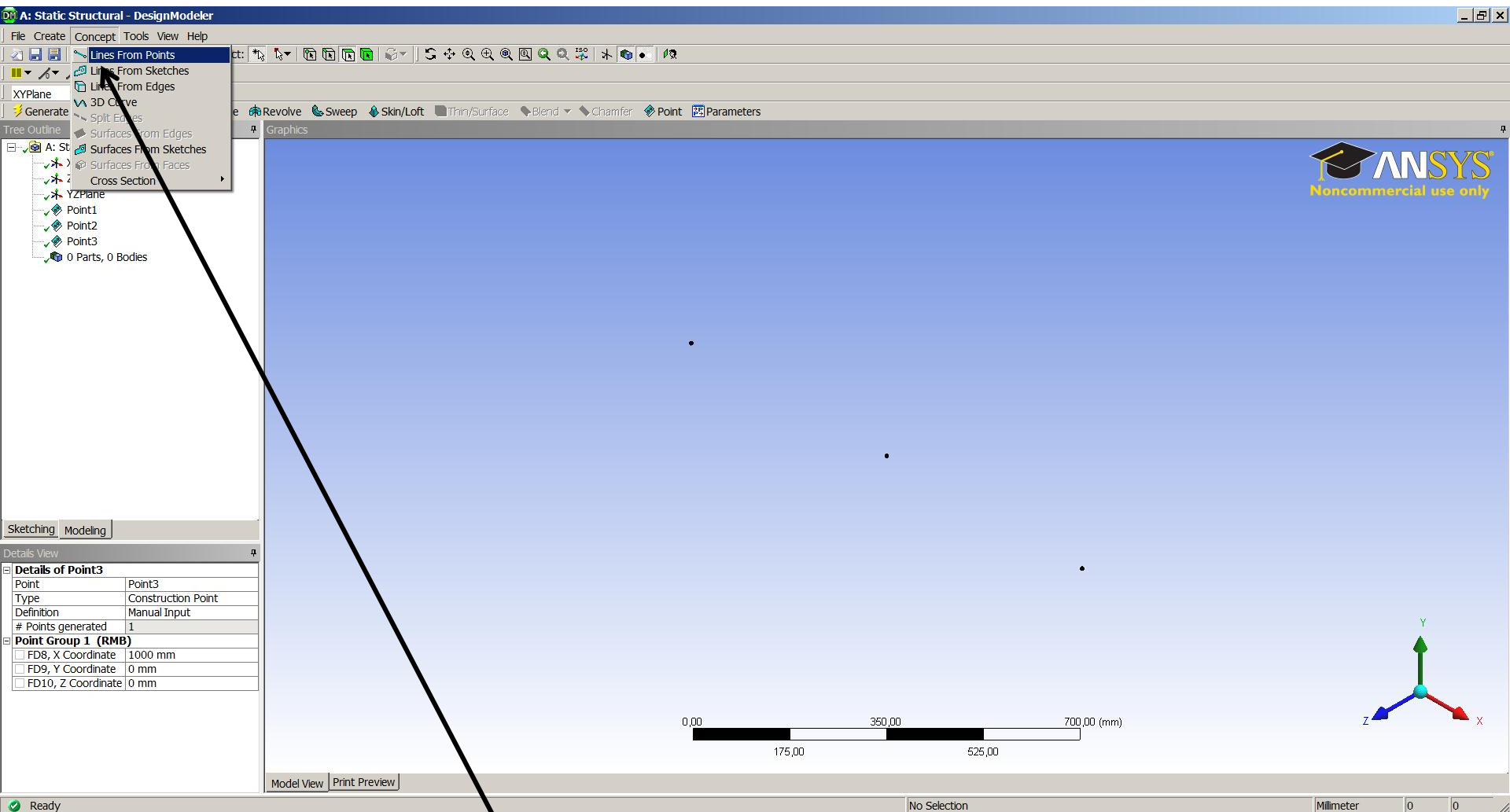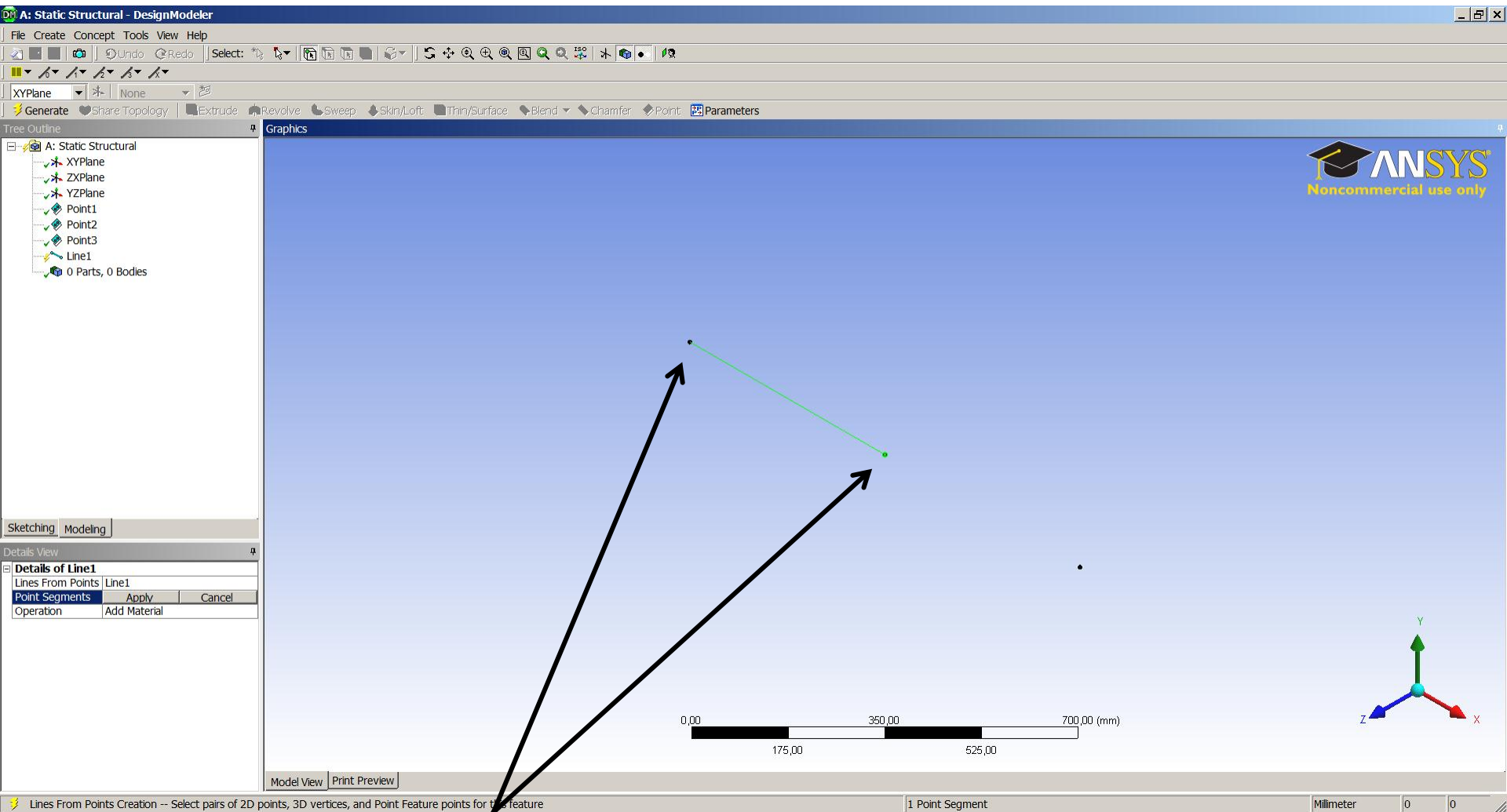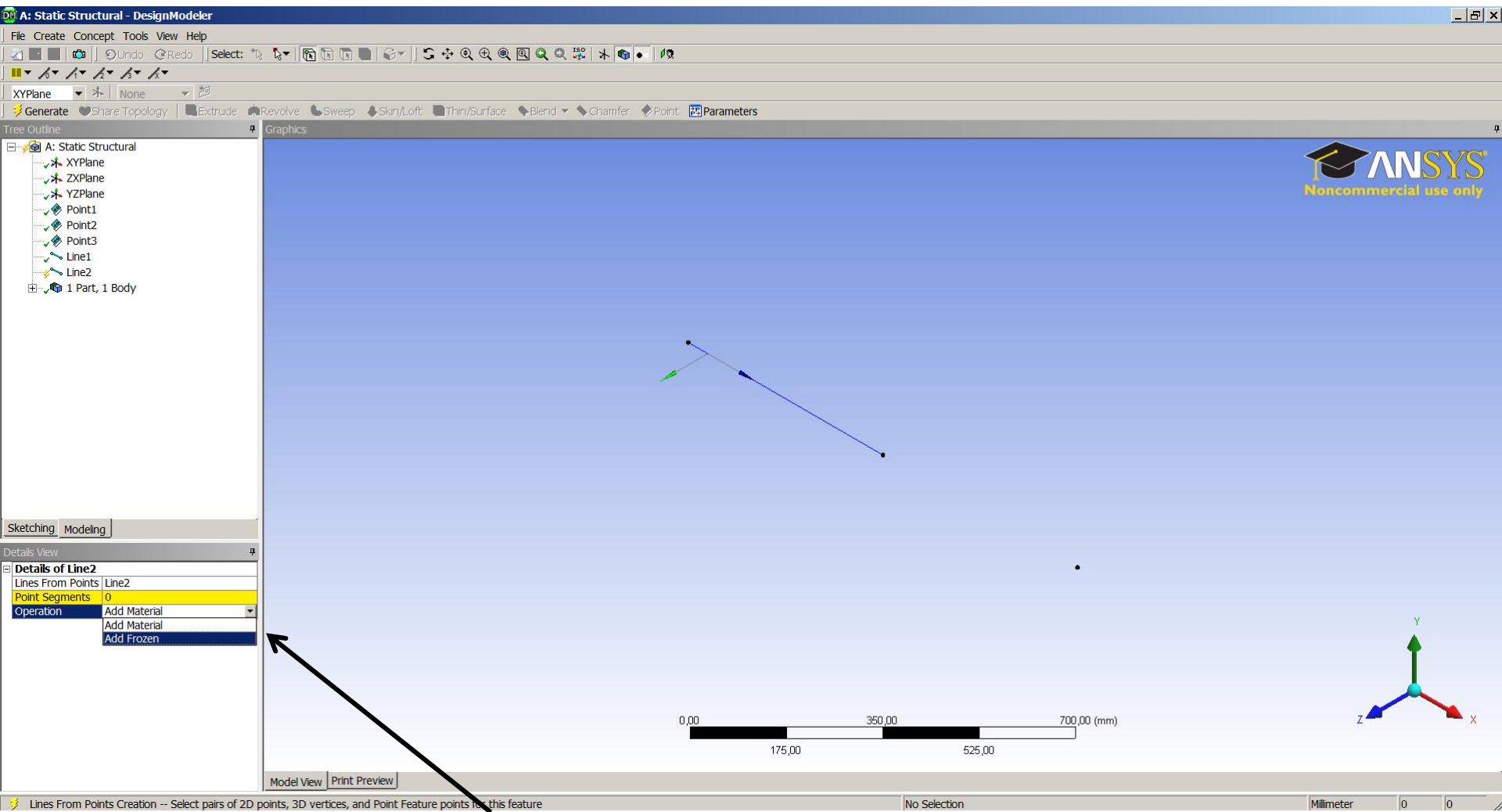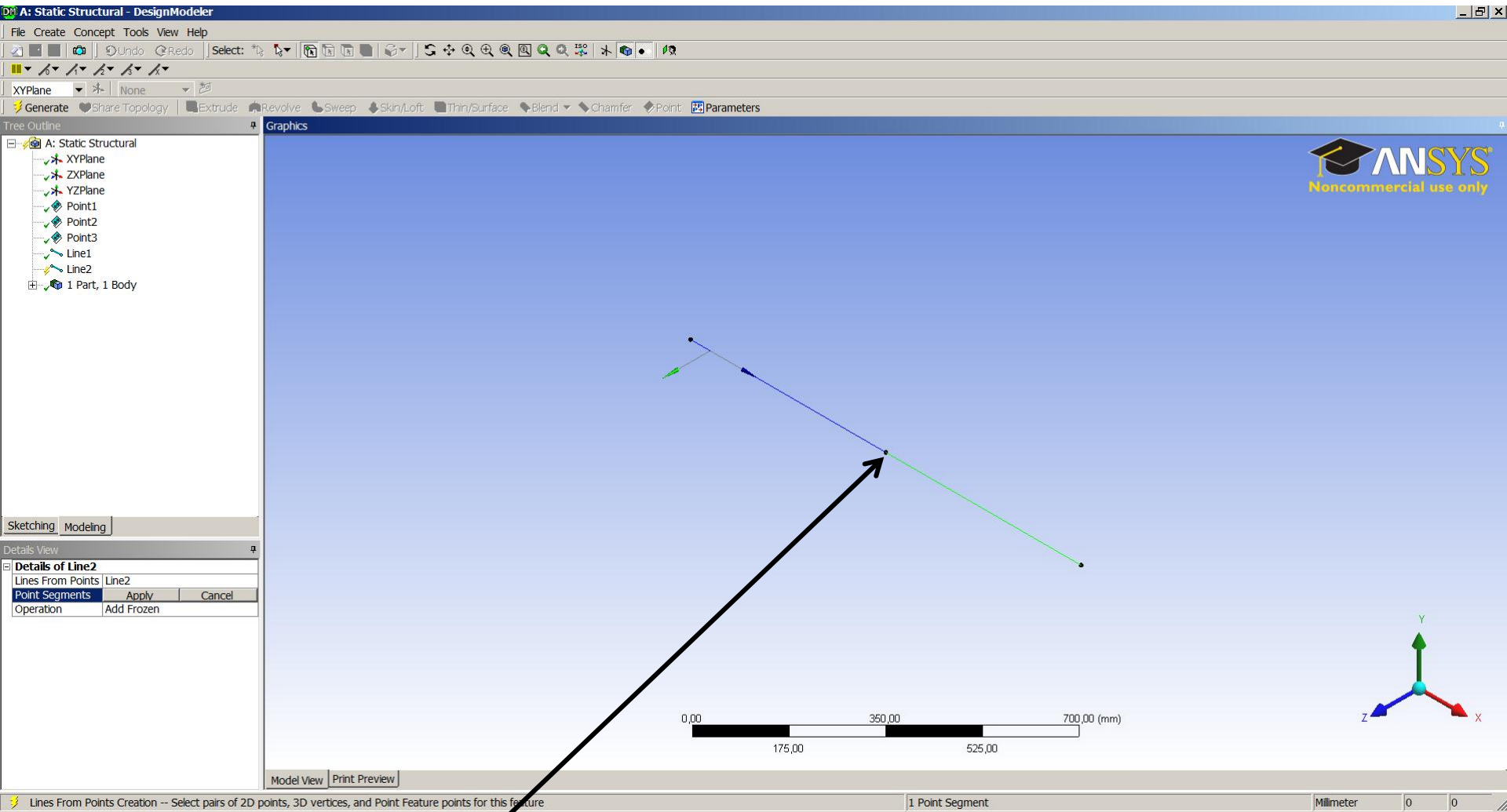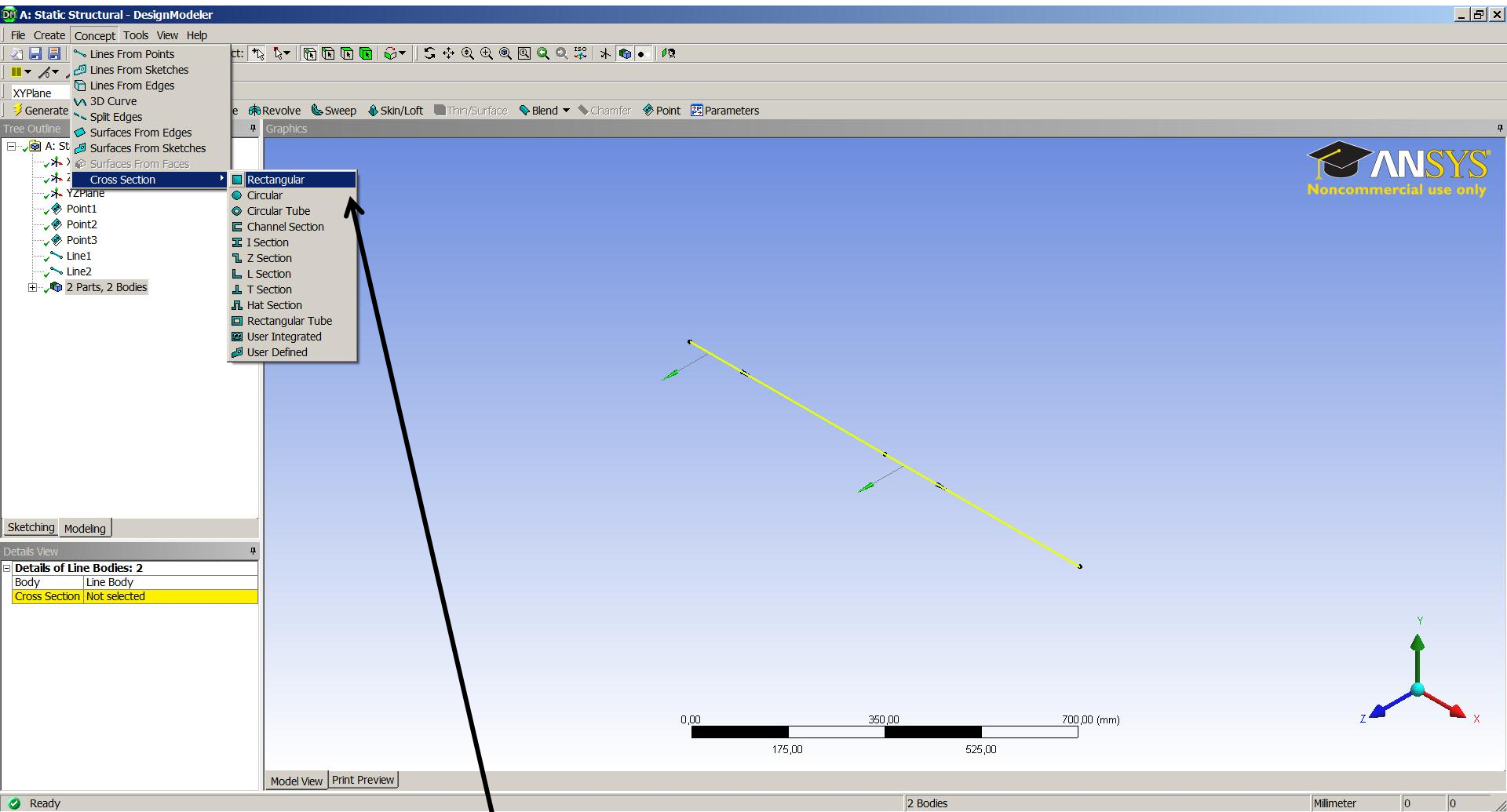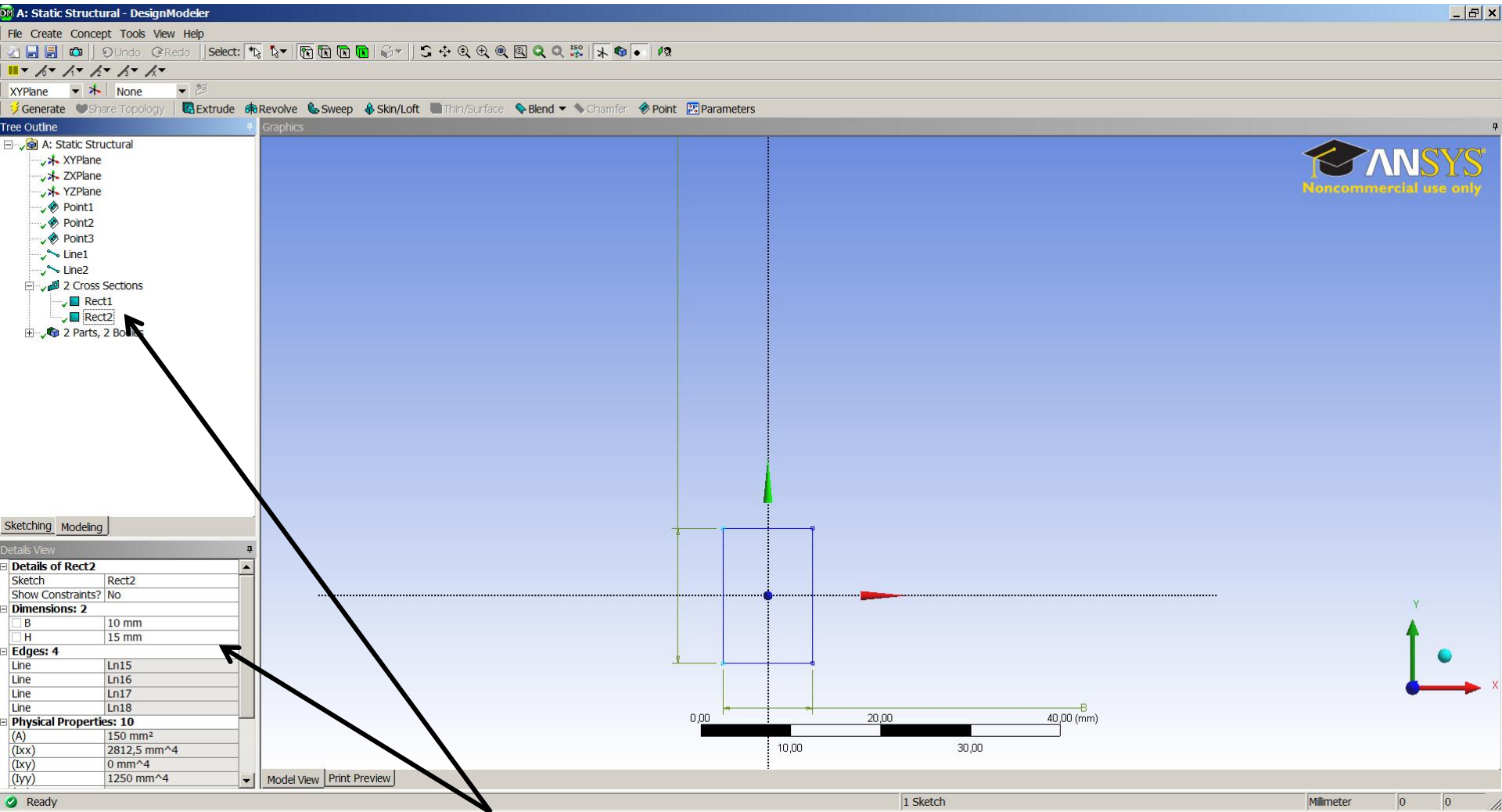
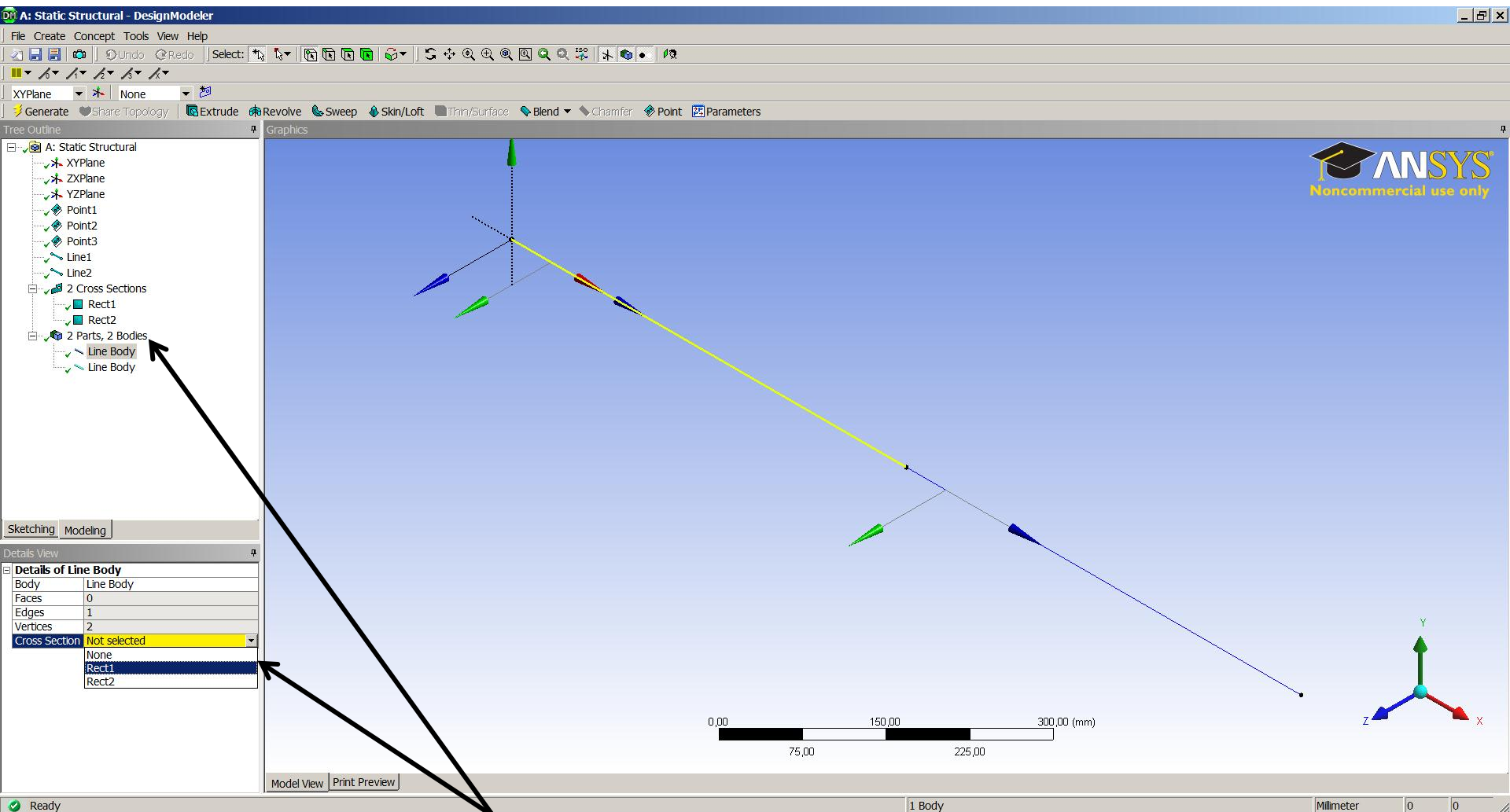Insert a new line and select Add frozen.

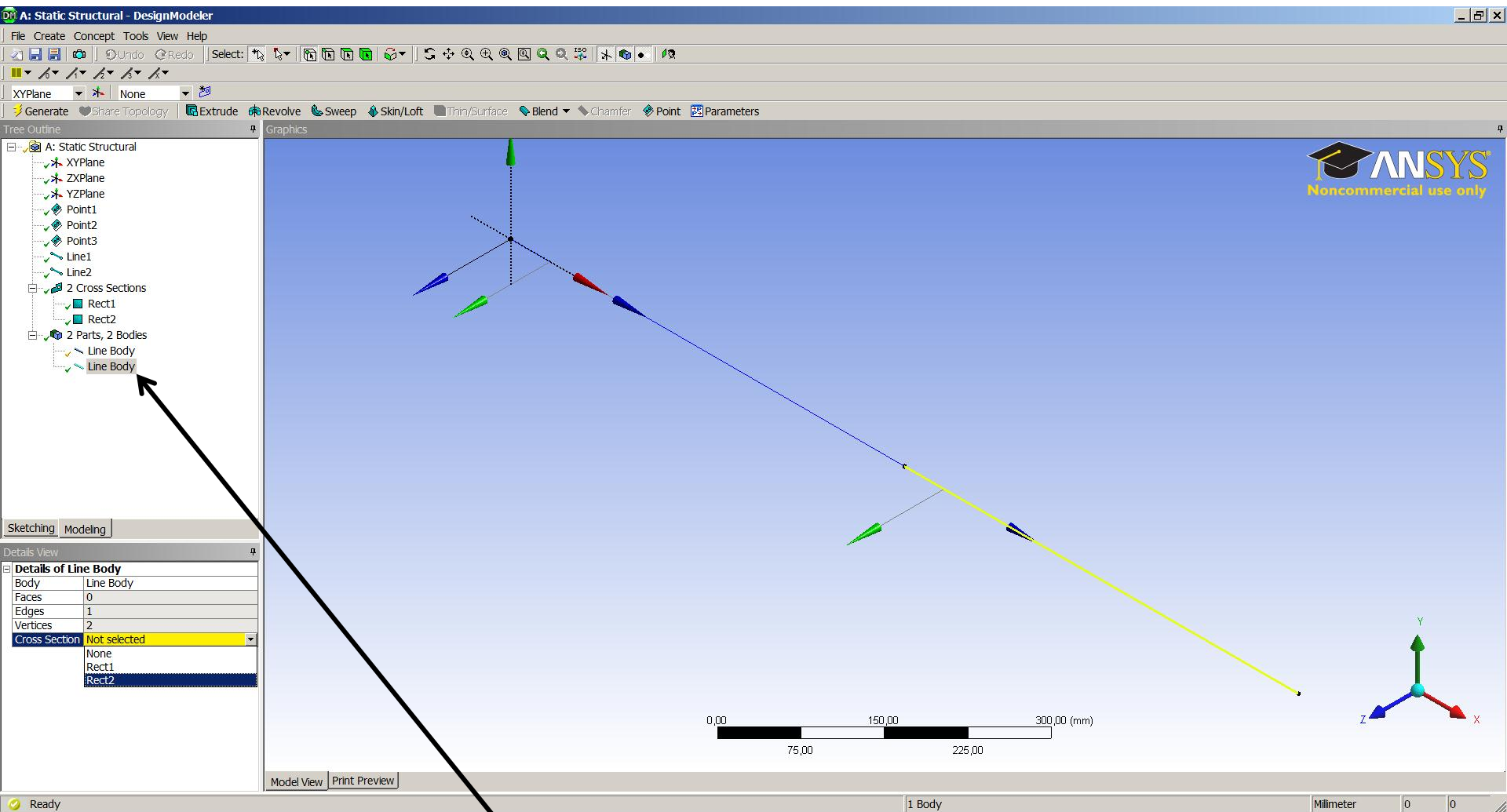Make a line between point 2 and point 3

Select a Cross section. In this example the Rectangular is used.
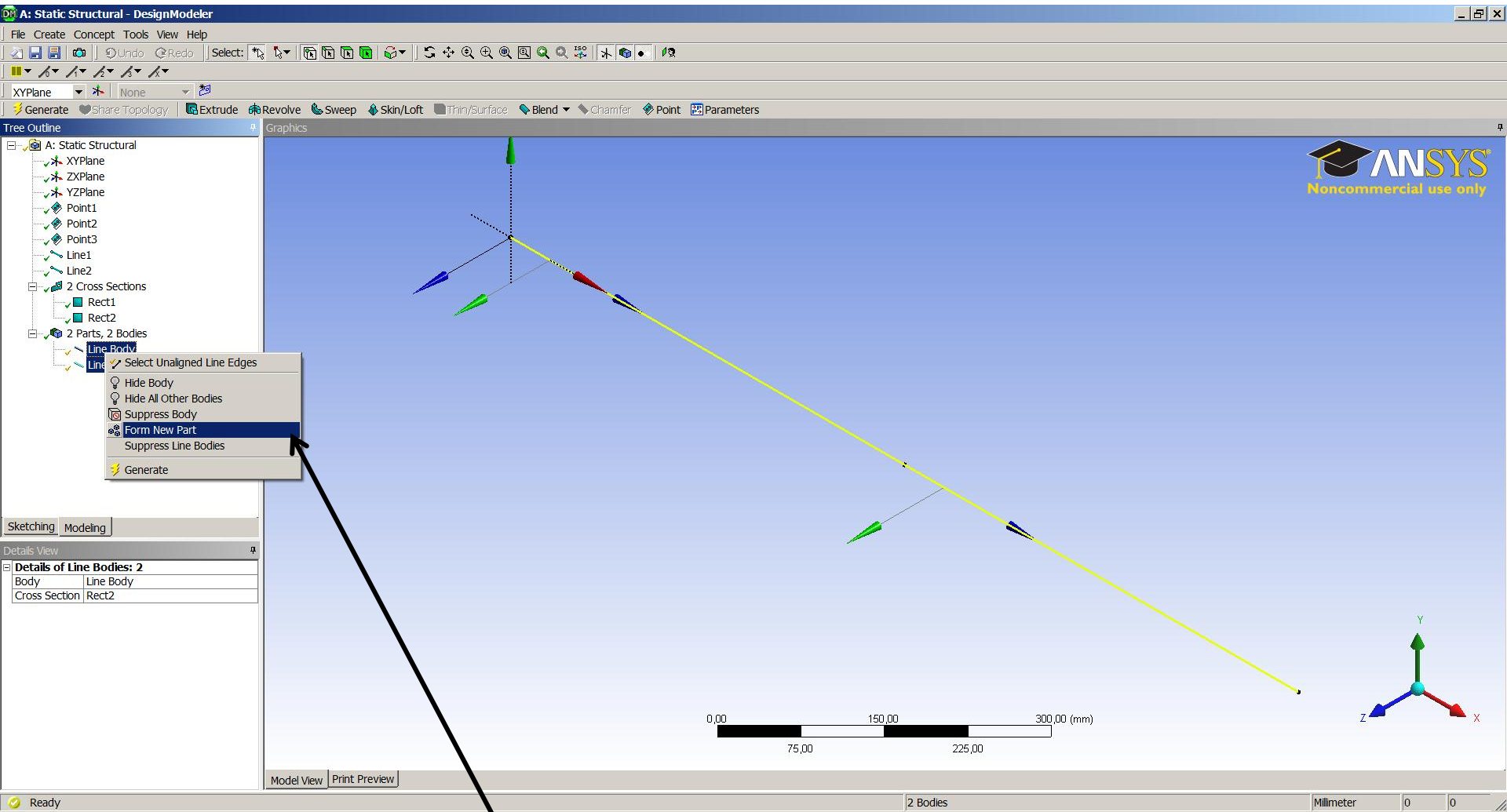
Insert a cross section again and set H=15mm.

Select line 1 and add Rect1 cross section

Add cross section Rect2 to the line 2.

Select the two bodies and right click on the mouse and select From New Part. Close the window

Click on Model

Insert a Fixed Support
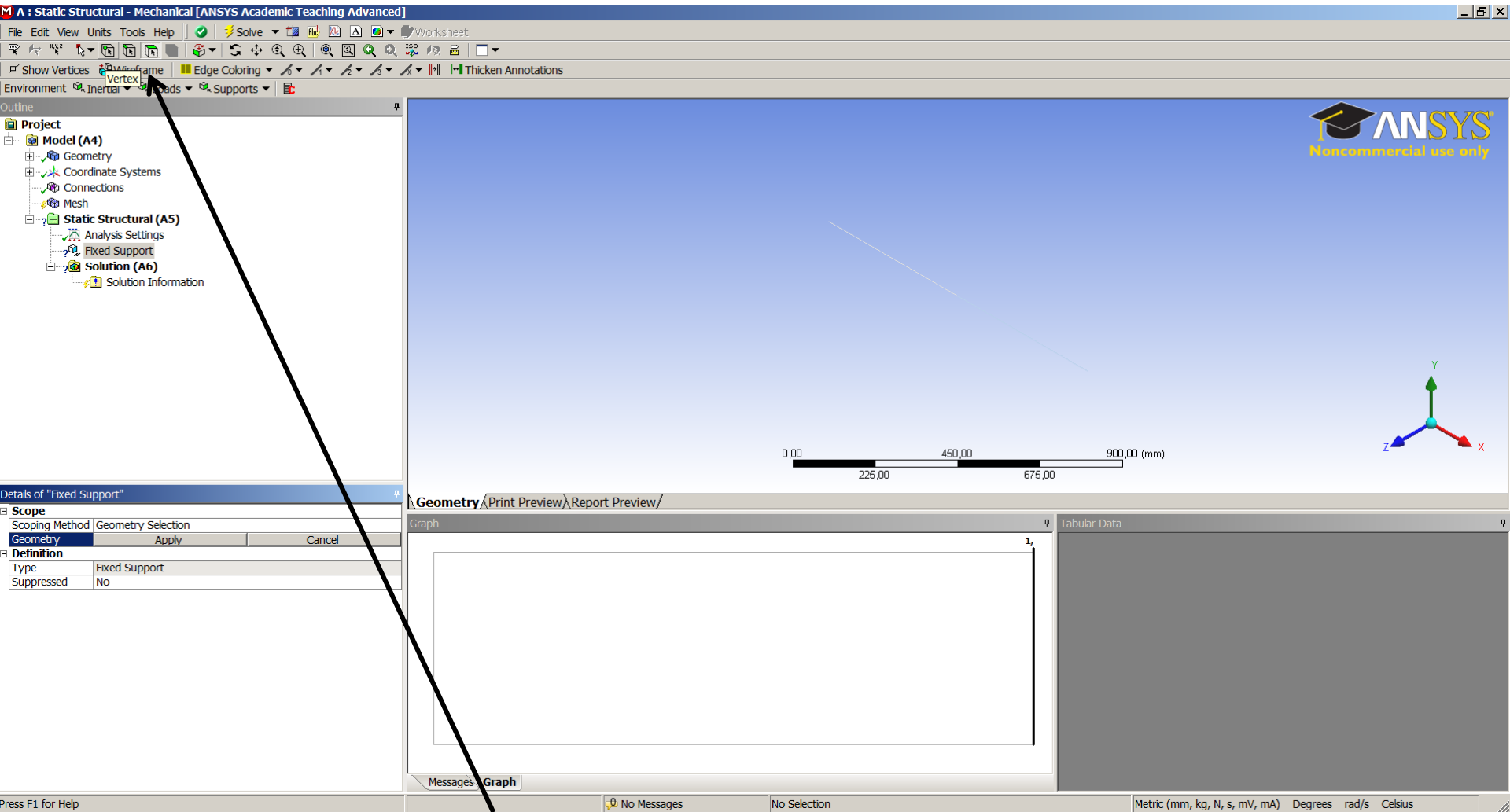
Click on Vertex
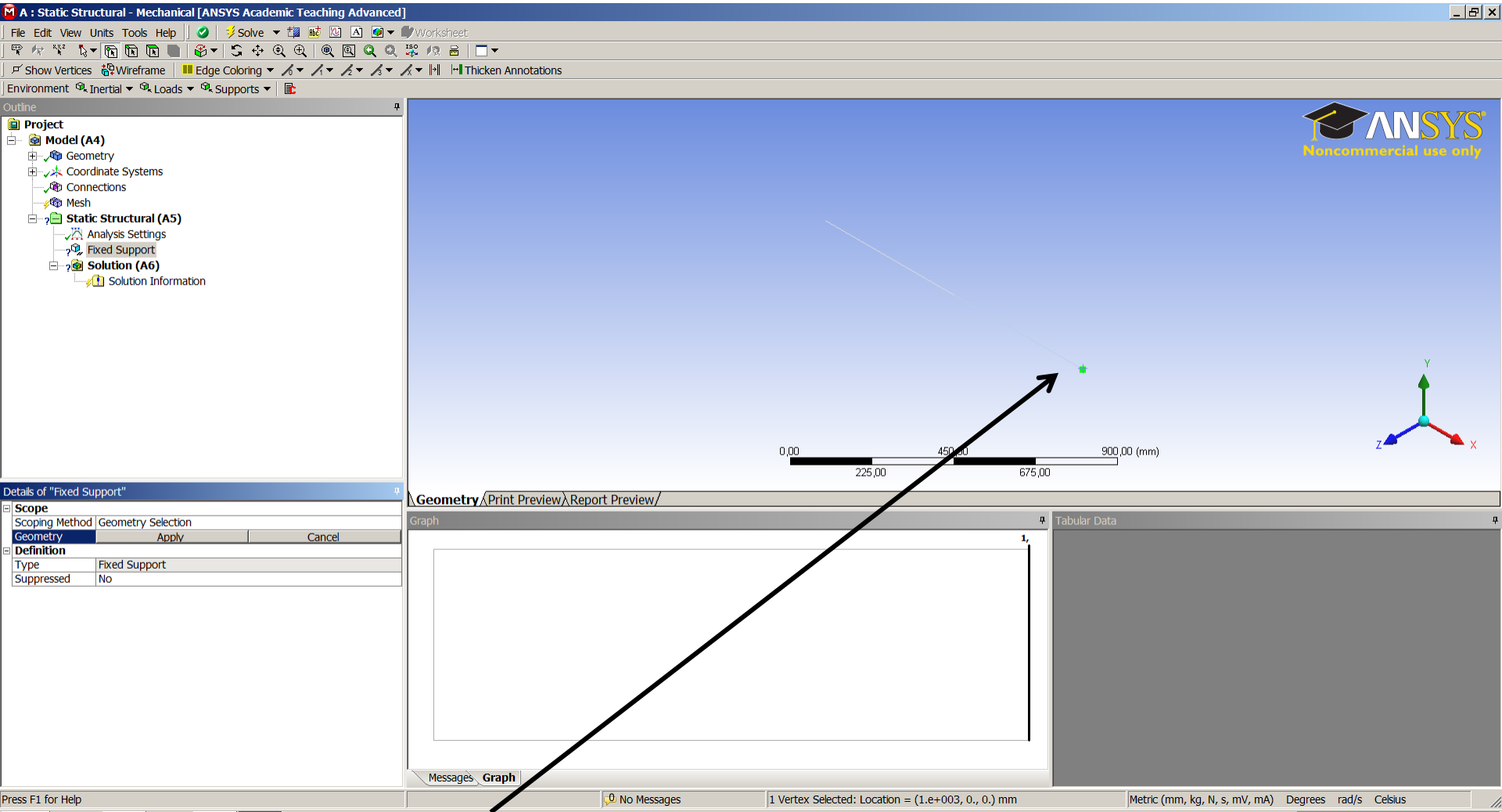
Select point 3 and click on apply

Insert a Force

Select point 1 and click apply
then click on Vector

Select Components

Click on point 1 and apply then set the Y component to 10 N
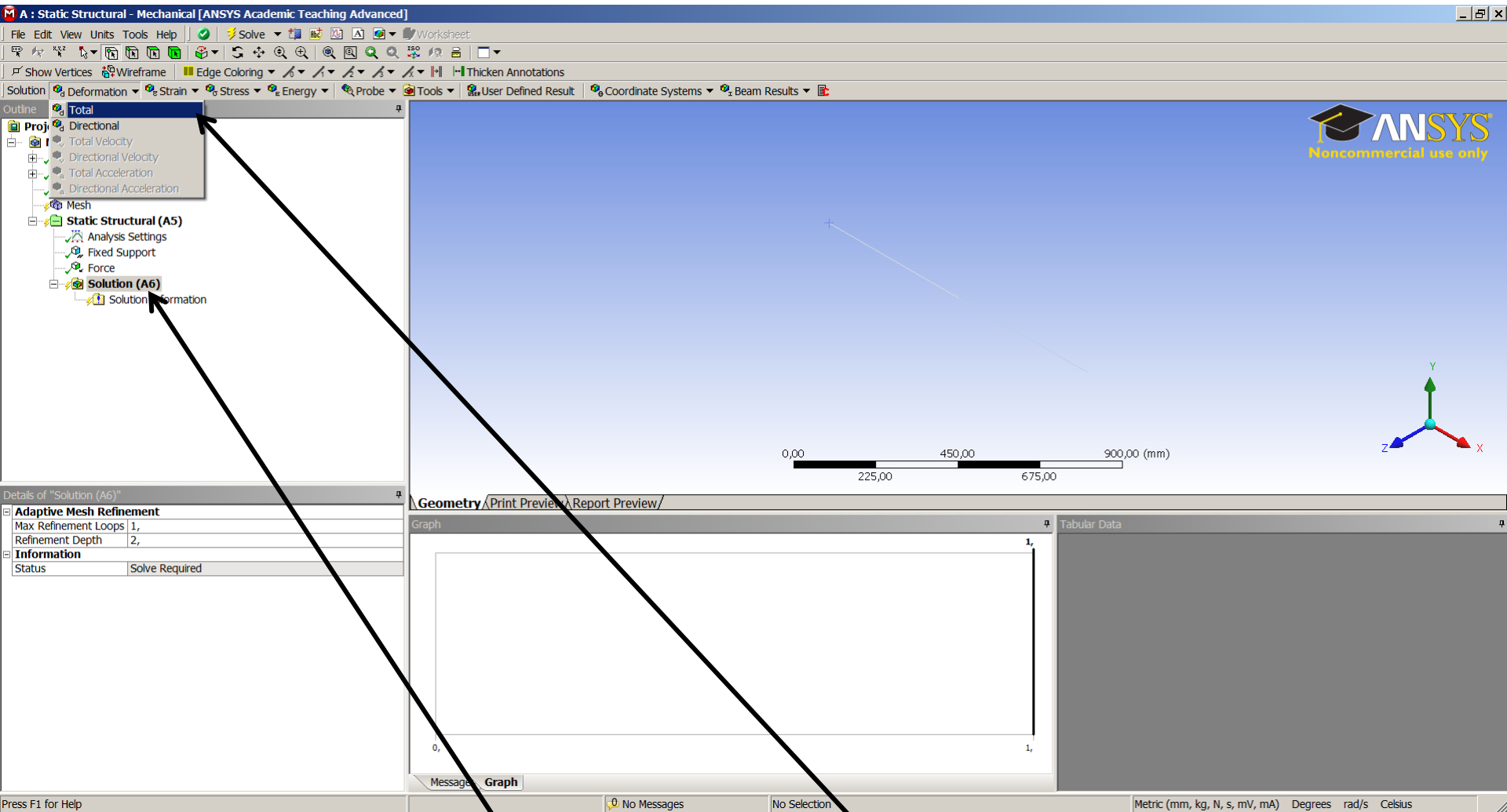
Click on Solution and insert Total deformation

Click on Solve

Solution is done

Click on the box beside Maximum when it is selected
a P sign will show up
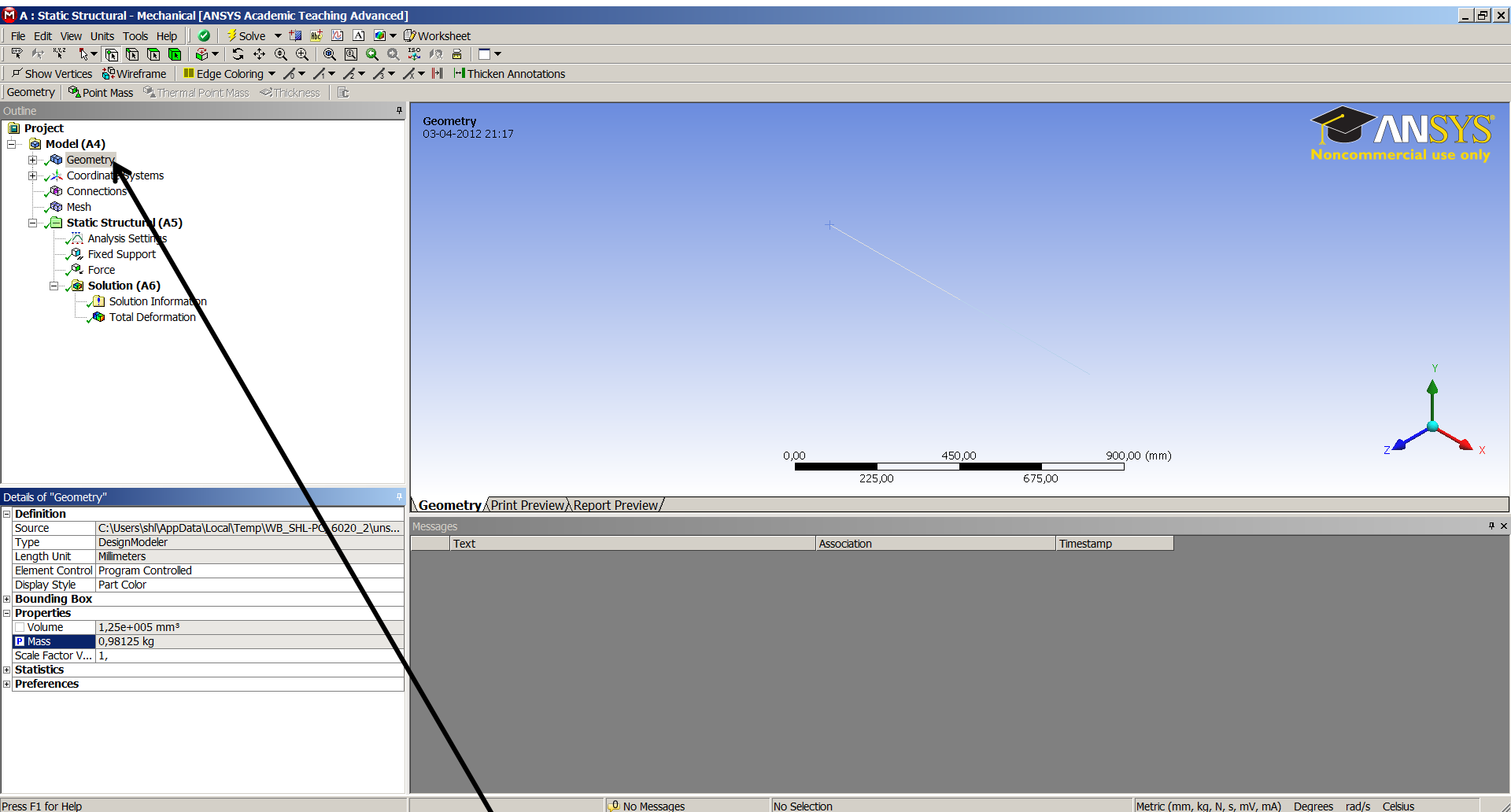
Click in Geometry and click on the box beside Mass.
Close the window and start design modeler
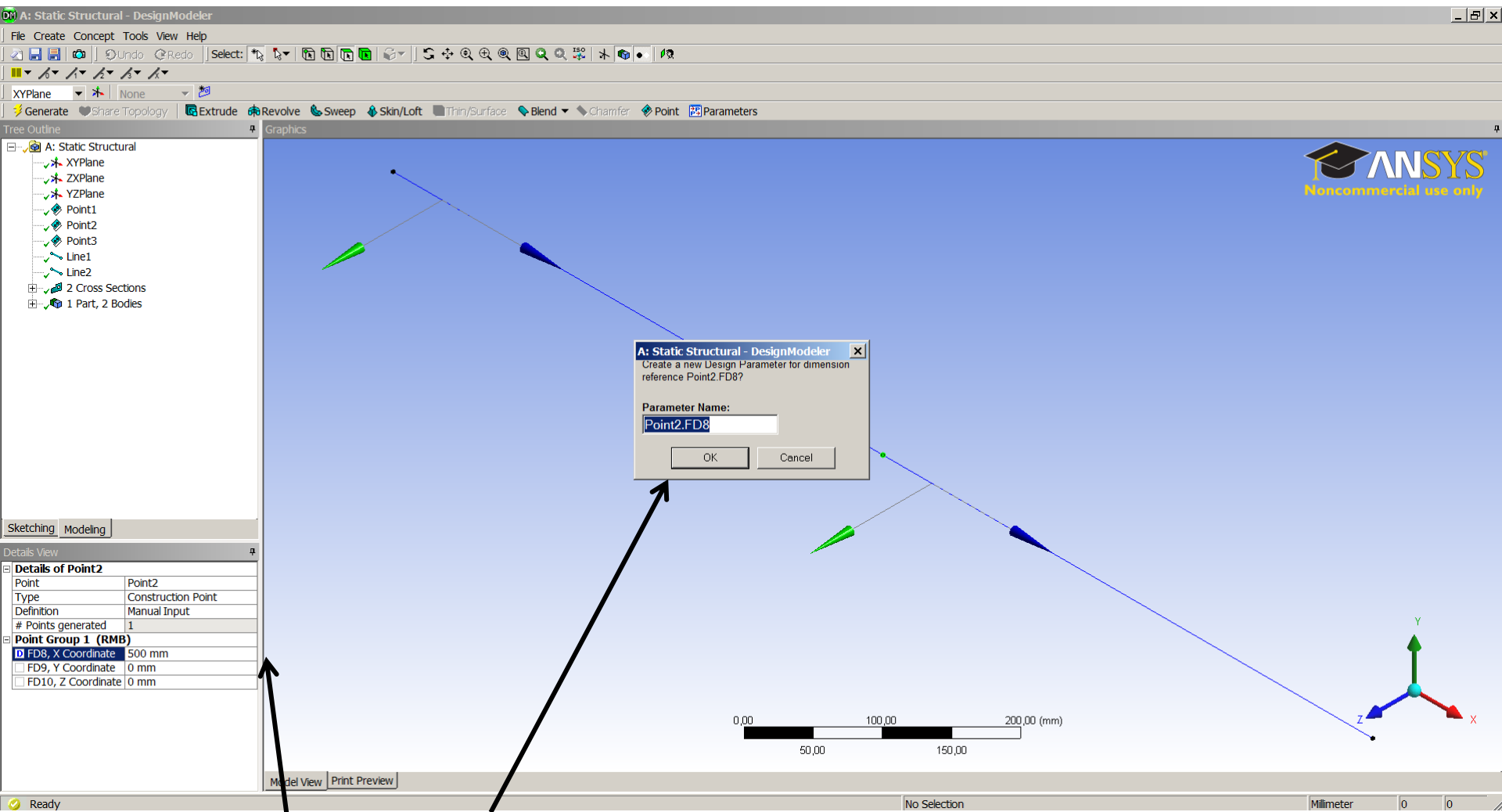
Click on the box for the x coordinate for point 2. Click
OK and close the window

Click on Parameter set

A new window is showing with the parameter then close the window

Click on Goal Driven optimization

Click on Design of experiments

In the new window you can see the input parameter value. Click on Update Design of Experiments

Unsaved Project - Workbench

File   View   Tools   Units   Help

New   Open...   Save   Save As...   Import... | Preview Design of Experiments   Update Design of Experiments   Reconnect   Refresh Project   Update Project   Update All Design Points   Return to Project   Compact Mode

Toolbox

☐ Charts
- Parameters Parallel
- Design Point vs Parameter

Outline of Schematic B2: Design of Experiments

	A	B
1		Enabled
2	☐ ✓ Design of Experiments	
3	☐ Input Parameters	
4	☐ Static Structural (A1)	
5	P3 - Point2.FD8	☑
6	☐ Output Parameters	
7	☐ Static Structural (A1)	
8	P1 - Total Deformation Maximum	
9	P2 - Geometry Mass	
10	☐ Charts	
11	✓ Parameters Parallel	
12	✓ Design Points vs Parameter	

Table of Schematic B2: Design of Experiments

	A	B	C	D
1	Name	P3 - Point2.FD8	P1 - Total Deformation Maximum (mm)	P2 - Geometry Mass (kg)
2	1	500	14,168	0,98125
3	2	450	13,942	1,0009
4	3	550	14,444	0,96163
5	4	475	14,049	0,99106
6	5	525	14,299	0,97144

Properties of Outline A5: P3

	A	B
1	Property	Value
2	General	
3	Units	
4	Type	Design Variable
5	Classification	Continuous
6	Values	
7	Lower Bound	450
8	Upper Bound	550
9	Initial Value	500

Chart: No data

Messages

Progress

View All / Customize...

Now different value of deformation and mass calculated on the base of upper and lower bound of Point 2 is showing.