BIOS 601 Exercise: Measurement Error

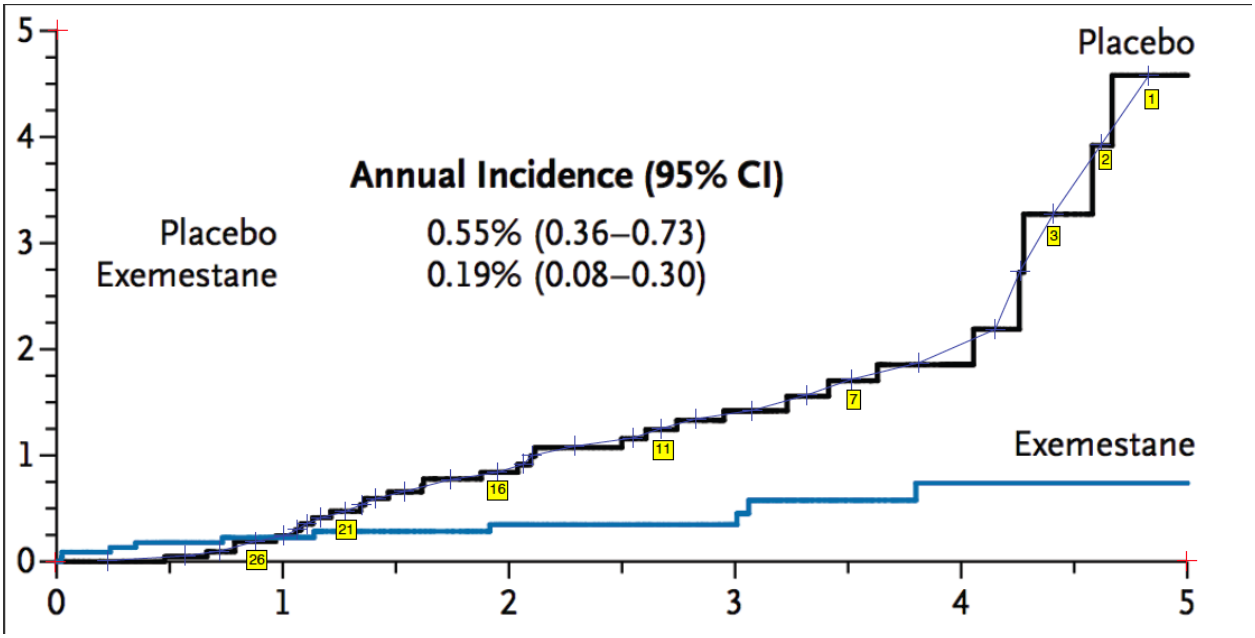
Time: 2 - 3 pm on Friday, Sept 2, 2011
Place: Computer Lab at Purvis Hall Basement

Purpose:
The data generated by this exercise will be used in class to illustrate the concepts of intra- and inter-observer variation, to quantify the magnitude of this variation, and to study its effect on other quantities derived from these measurements.

Instructions:

1. Save `Exemestane.png` and `CRP.png`[1] on your Desktop.
2. Open `http://sourceforge.net/projects/digitizer/files/`
3. Click `Download digit-exe-windows-4_1.zip (7.3 MB)` and save it on your Desktop.
4. Extract it and double click `engauge.exe`.
5. Go to `File` → `Import` and open `Exemestane.png`.
6. Click on the `Axis Point` icon (or Go to Digitize → `Axis Point`) and define three axis points where you know their (x, y) coordinates. You will see 3 red crosses.
7. Click on the `Curve Point` icon (or Go to Digitize → `Curve Point`) and digitize the 'Placebo' arm by clicking on one point on each horizontal line (see diagram next page: we are interested in how well people can measure on the vertical scale, so don't fuss about where on the x axis the point is.) Zoom in as much as you like when you do this. You will see blue crosses and a curve joining them. Measure at least 20 points.
8. Go to `File` → `Export As...` and save it as `Exemestane_LastName1.csv`.
9. Go to `Edit` → `Paste As New` to reload `Exemestane.png`, repeat Steps 5 - 8 and save your output as `Exemestane_LastName2.csv`.
10. Repeat Steps 5 - 9 for `CRP.png`, digitize the lowest curve (green in Fig 2 A) and save your output as `CRP_LastName1.csv` and `CRP_LastName1.csv`.
11. E-mail these 4 files to `james.hanley@mcgill.ca` under the subject `BIOS601 measurement exercise`. Also retain the 4 files for yourself for analysis at a later date.

[1] 2 files available under Resources on bios601 site.

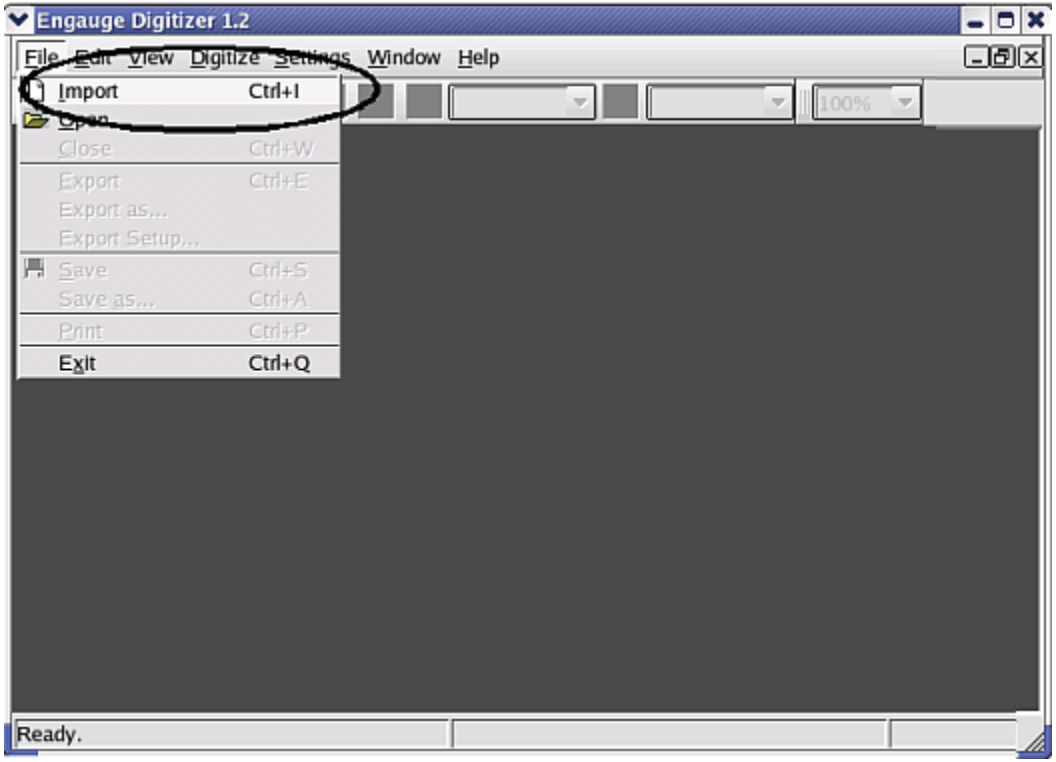

Annual Incidence (95% CI)
Placebo 0.55% (0.36–0.73)
Exemestane 0.19% (0.08–0.30)
Placebo
Exemestane
0
1
2
3
4
5
26
21
16
11
7
3
2
1

Engauge Digitizer - Manual Line Graph Tutorial

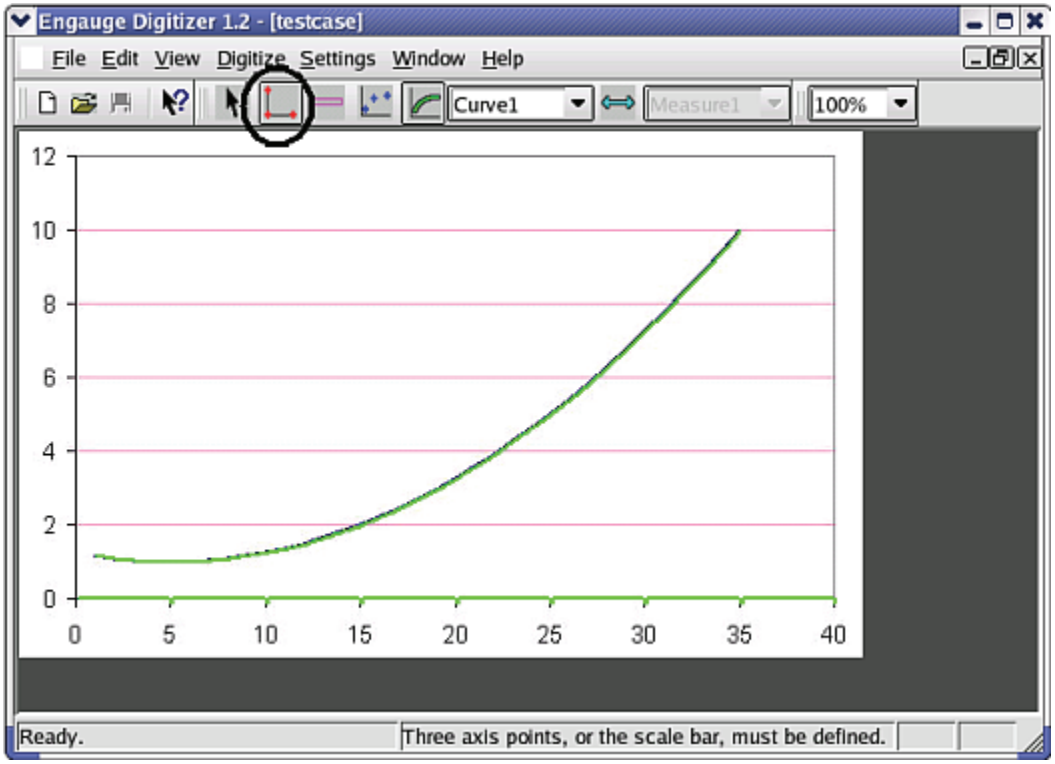
Manually Digitizing A Line Graph Image

The following steps manually digitize a linear cartesian graph with one curve. These steps are essentially the same as the steps involved in manually digitizing a point graph.

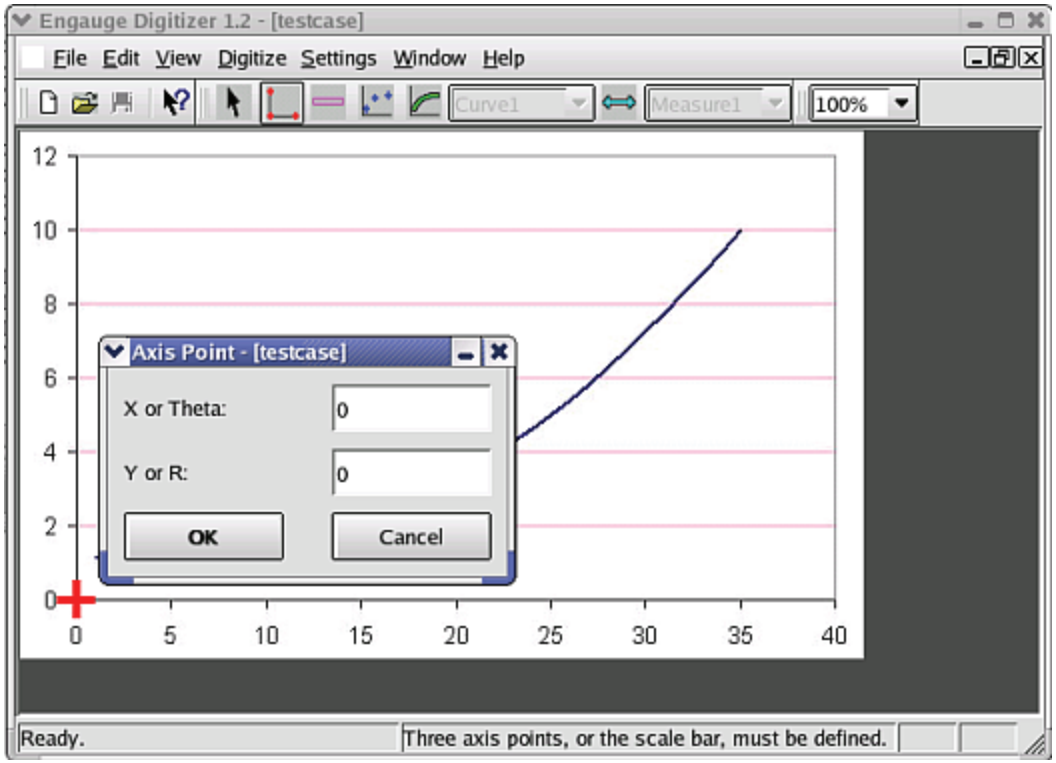
- Import the testcase.png case from the Samples directory, using File/Import as shown. Not shown are the other methods of importing: using the "-import" command line option, by copying and pasting, and by dragging and dropping



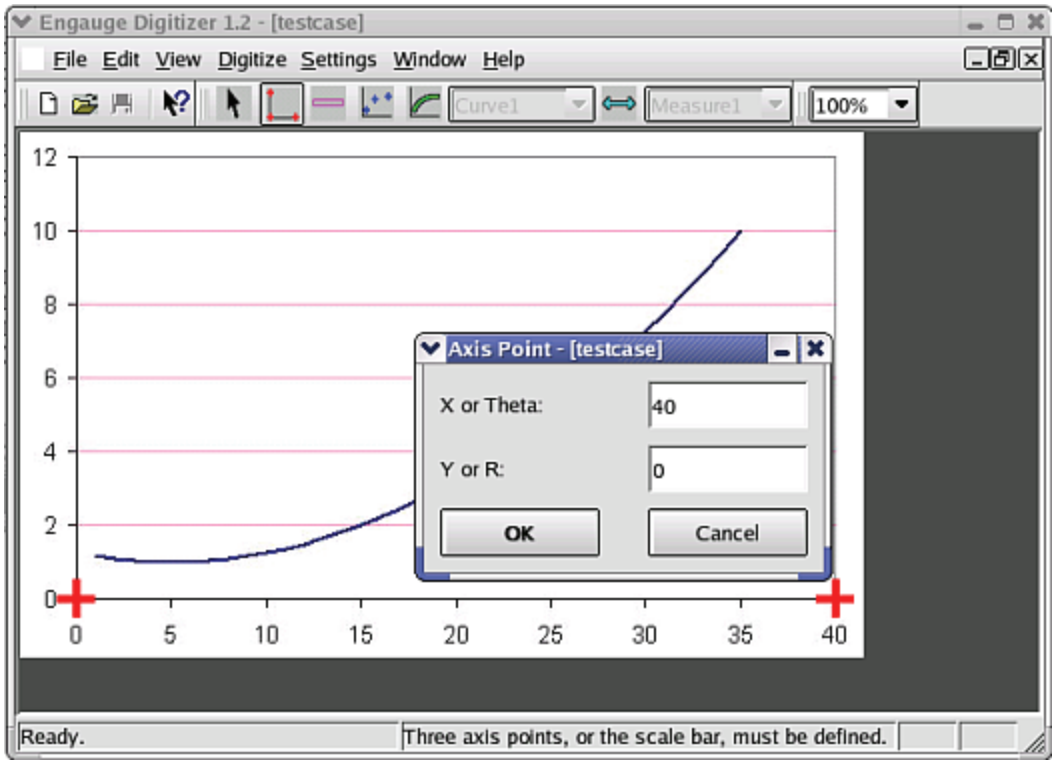
- Click on the Axes Point button before entering axes points. These will define the coordinate system



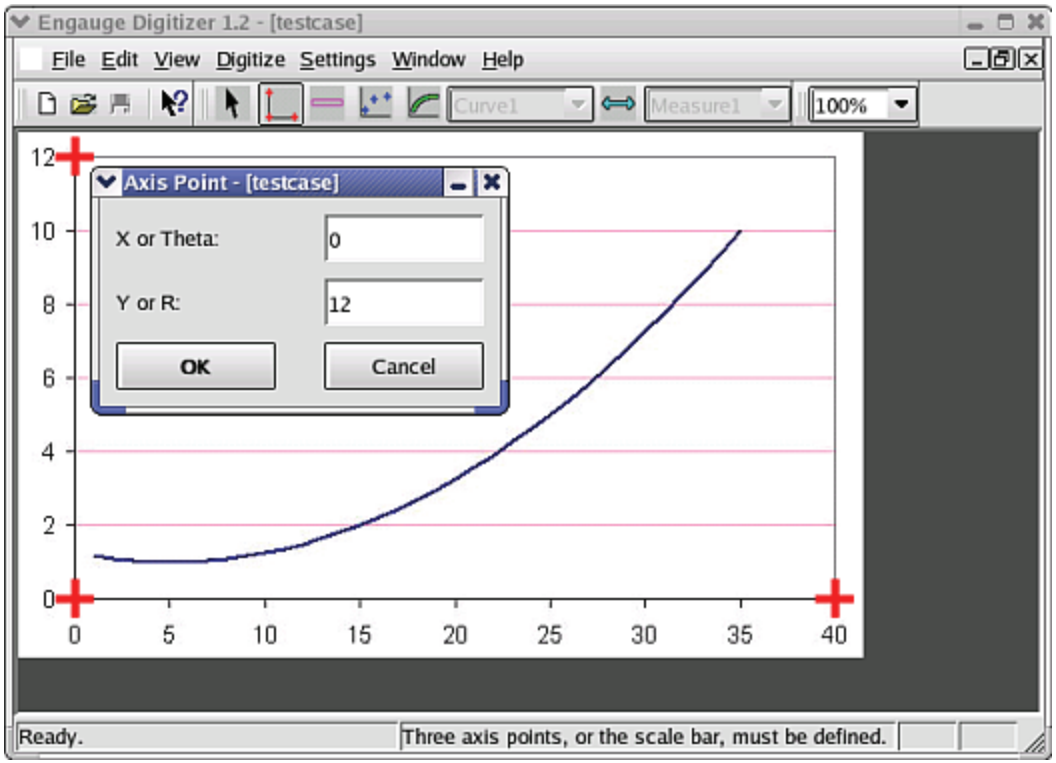
- Click on one of the axes to add the first axes point, then enter its graph coordinates



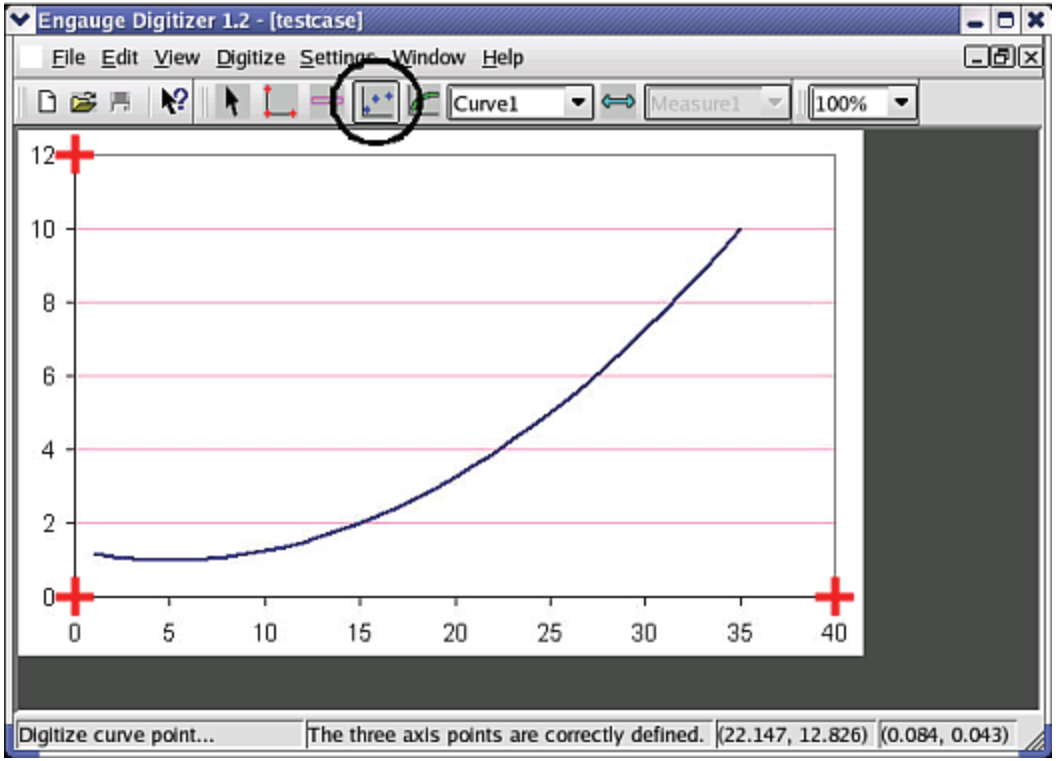
- Click on one of the axes to add the second axes point , then enter its graph coordinates



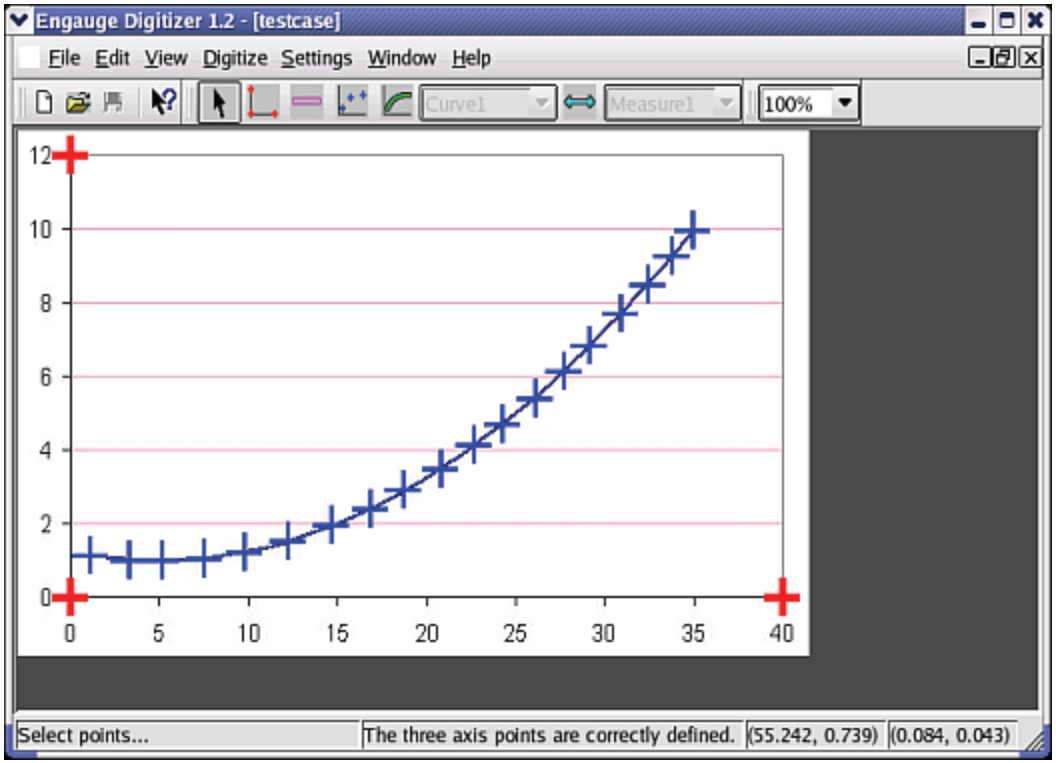
- Click on one of the axes to add the third axes point , then enter its graph coordinates



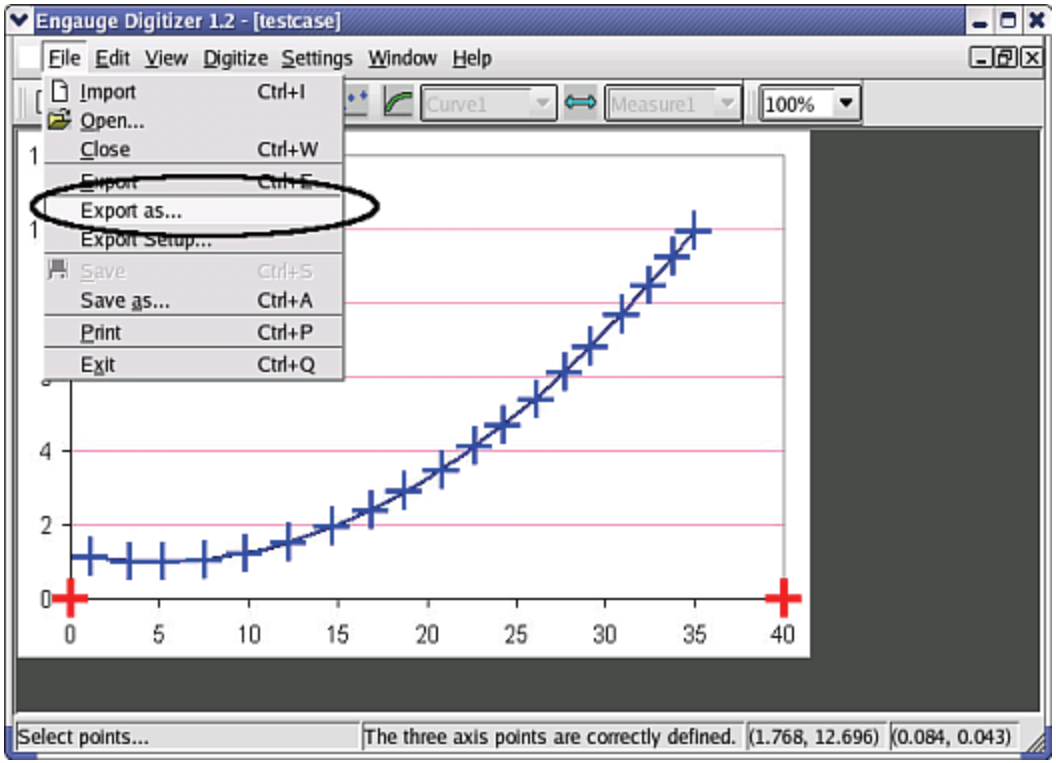
- Click on the Curve Points button before entering curve points. These will contain the digitized graph data



- Click on the curve to add a curve point. Repeat until the graph is covered with a sufficient number of curve points. If this step is too slow and tedious, you can first automatically digitize entire segments at a time using segment fill



- Export the curve points into a tabular text file using the File/Export As menu option as shown. Not shown are the other methods of exporting the curve points from the curve geometry window: copying and pasting, and dragging and dropping


Engauge Digitizer 1.2 - [testcase]
File Edit View Digitize Settings Window Help
Import Ctrl+I
Open...
Close Ctrl+W
Export Ctrl+E
Export as...
Export Setup...
Save Ctrl+S
Save as... Ctrl+A
Print Ctrl+P
Exit Ctrl+Q
Curve1
Measure1
100%
0
2
4
0 5 10 15 20 25 30 35 40
Select points...
The three axis points are correctly defined.
(1.768, 12.696)
(0.084, 0.043)