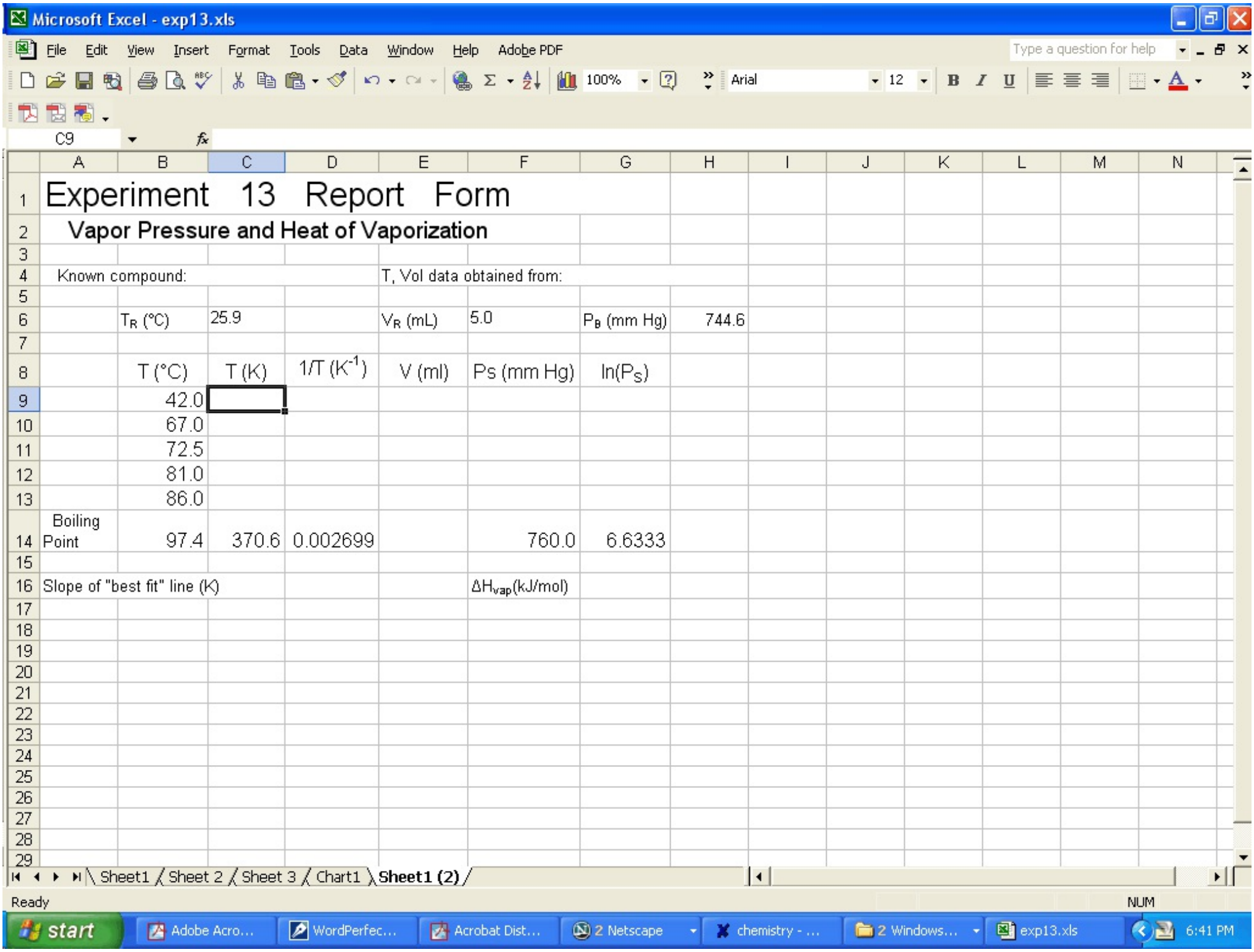
This example is based on an older version of this lab. It is intended to help with seeing how to do certain things using Excel, particularly getting more than one data set on a graph. It was also using a much older version of Excel. The final graph should have 7 data points, 5 T/V points and two boiling points, the normal boiling pt. (found in the CRC) and the experimental b.p. determined in lab. Your new tables will look a little different than the ones in this examples since there are now lines for three experimental b.p. determinations and then a line for the average exp. b.p. There's also a line for the normal b.p. See the last page of this file for an example of the finished graph. This was original done when the experiment was called exp 13 (it's now exp 14).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Arial 12
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Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound:
T, Vol data obtained from:
$T_R$ (°C) 25.9
$V_R$ (mL) 5.0
$P_B$ (mm Hg) 744.6
T (°C) | T (K) | 1/T ($K^{-1}$) | V (ml) | Ps (mm Hg) | ln($P_S$)
42.0
67.0
72.5
81.0
86.0
Boiling Point 97.4 370.6 0.002699 760.0 6.6333
Slope of "best fit" line (K)
$\Delta H_{vap}$(kJ/mol)
Sheet1 Sheet 2 Sheet 3 Chart1 Sheet1 (2)
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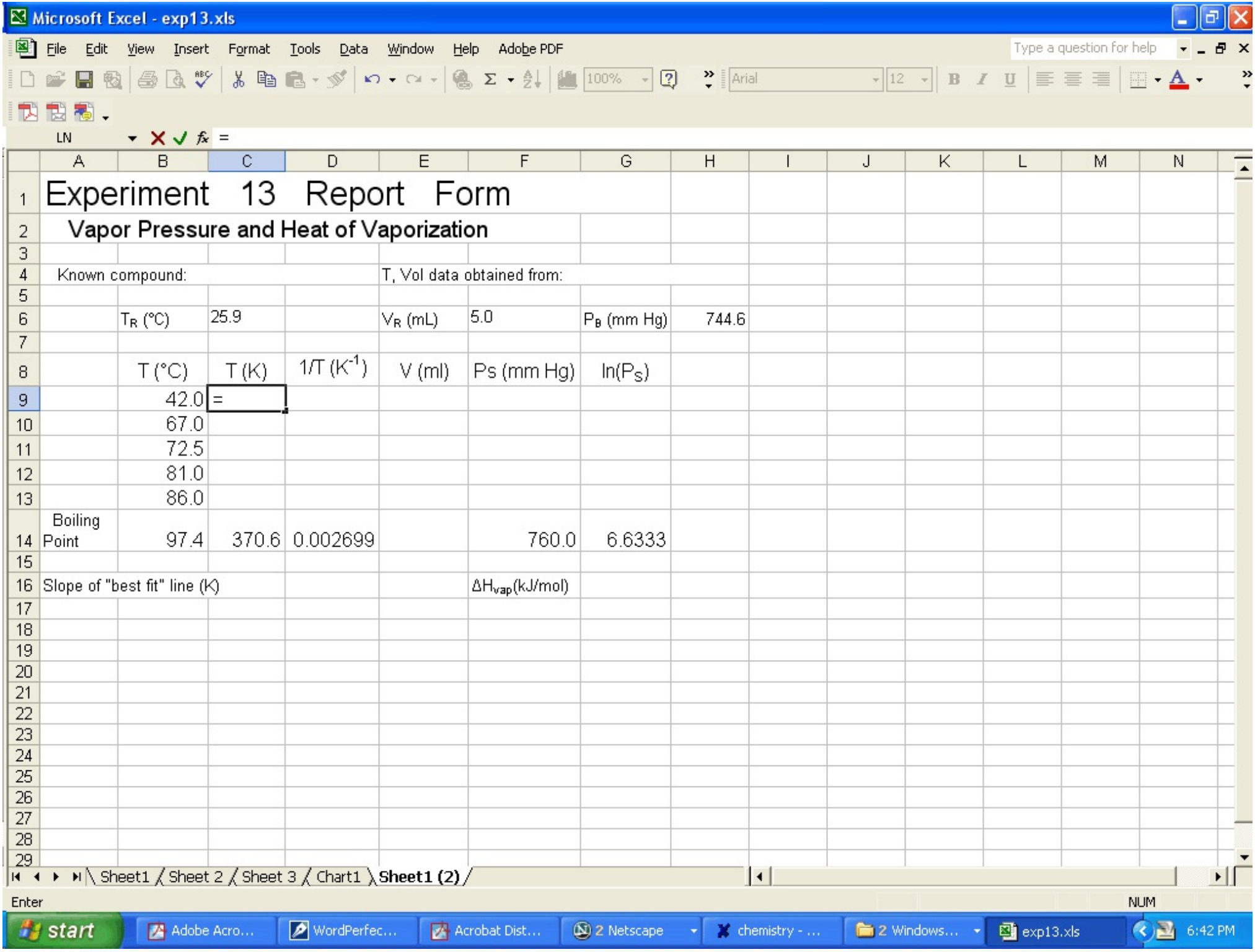
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Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound:
T, Vol data obtained from:
TR (°C) 25.9
VR (mL) 5.0
PB (mm Hg) 744.6
T (°C) T (K) 1/T (K-1) V (ml) Ps (mm Hg) ln(PS)
42.0 =
67.0
72.5
81.0
86.0
Boiling Point 97.4 370.6 0.002699 760.0 6.6333
Slope of "best fit" line (K)
ΔHvap(kJ/mol)
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LN =b9+273.15

# Experiment 13 Report Form

## Vapor Pressure and Heat of Vaporization

Known compound:

T, Vol data obtained from:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | $T_R$ (°C) | 25.9 | | $V_R$ (mL) | 5.0 | $P_B$ (mm Hg) | 744.6 |

| | T (°C) | T (K) | 1/T ($K^{-1}$) | V (ml) | Ps (mm Hg) | ln($P_S$) |
|---|---|---|---|---|---|---|
| | 42.0 | =b9+273.15 | | | | |
| | 67.0 | | | | | |
| | 72.5 | | | | | |
| | 81.0 | | | | | |
| | 86.0 | | | | | |
| Boiling Point | 97.4 | 370.6 | 0.002699 | | 760.0 | 6.6333 |

Slope of "best fit" line (K)

$\Delta H_{vap}$(kJ/mol)

Sheet1 Sheet 2 Sheet 3 Chart1 Sheet1 (2)

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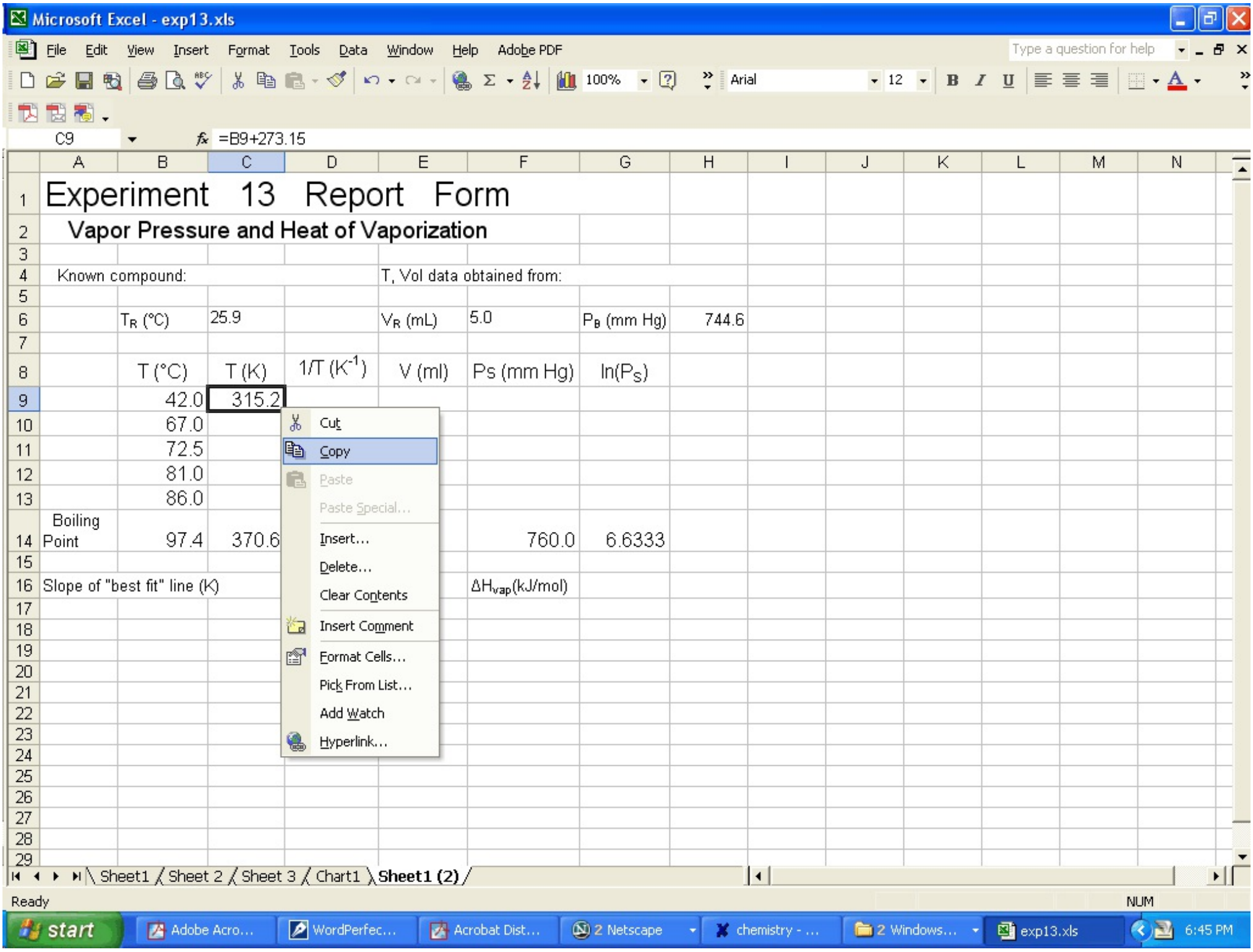
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Arial 12
C9 =B9+273.15
Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound:
T, Vol data obtained from:
TR (°C) 25.9
VR (mL) 5.0
PB (mm Hg) 744.6
T (°C) T (K) 1/T (K-1) V (ml) Ps (mm Hg) ln(PS)
42.0 315.2
67.0
72.5
81.0
86.0
Boiling Point 97.4 370.6 760.0 6.6333
Slope of "best fit" line (K)
ΔHvap(kJ/mol)
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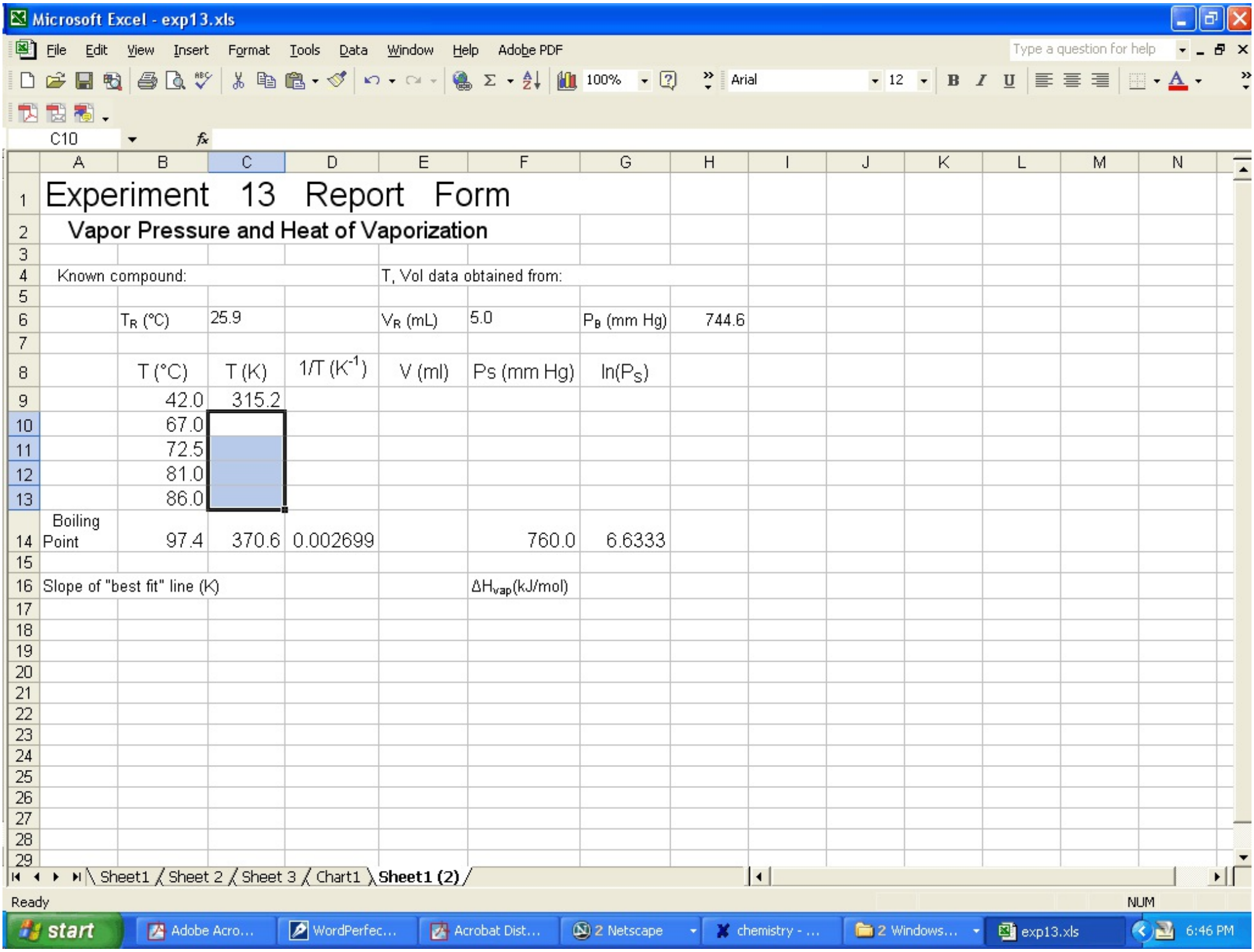

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C10

# Experiment 13 Report Form

## Vapor Pressure and Heat of Vaporization

Known compound:

T, Vol data obtained from:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | $T_R$ (°C) | 25.9 | | $V_R$ (mL) | 5.0 | $P_B$ (mm Hg) | 744.6 |

| | T (°C) | T (K) | 1/T ($K^{-1}$) | V (ml) | Ps (mm Hg) | ln($P_S$) |
|---|---|---|---|---|---|---|
| | 42.0 | 315.2 | | | | |
| | 67.0 | | | | | |
| | 72.5 | | | | | |
| | 81.0 | | | | | |
| | 86.0 | | | | | |
| Boiling Point | 97.4 | 370.6 | 0.002699 | | 760.0 | 6.6333 |

Slope of "best fit" line (K)

$\Delta H_{vap}$(kJ/mol)

Sheet1 Sheet 2 Sheet 3 Chart1 Sheet1 (2)

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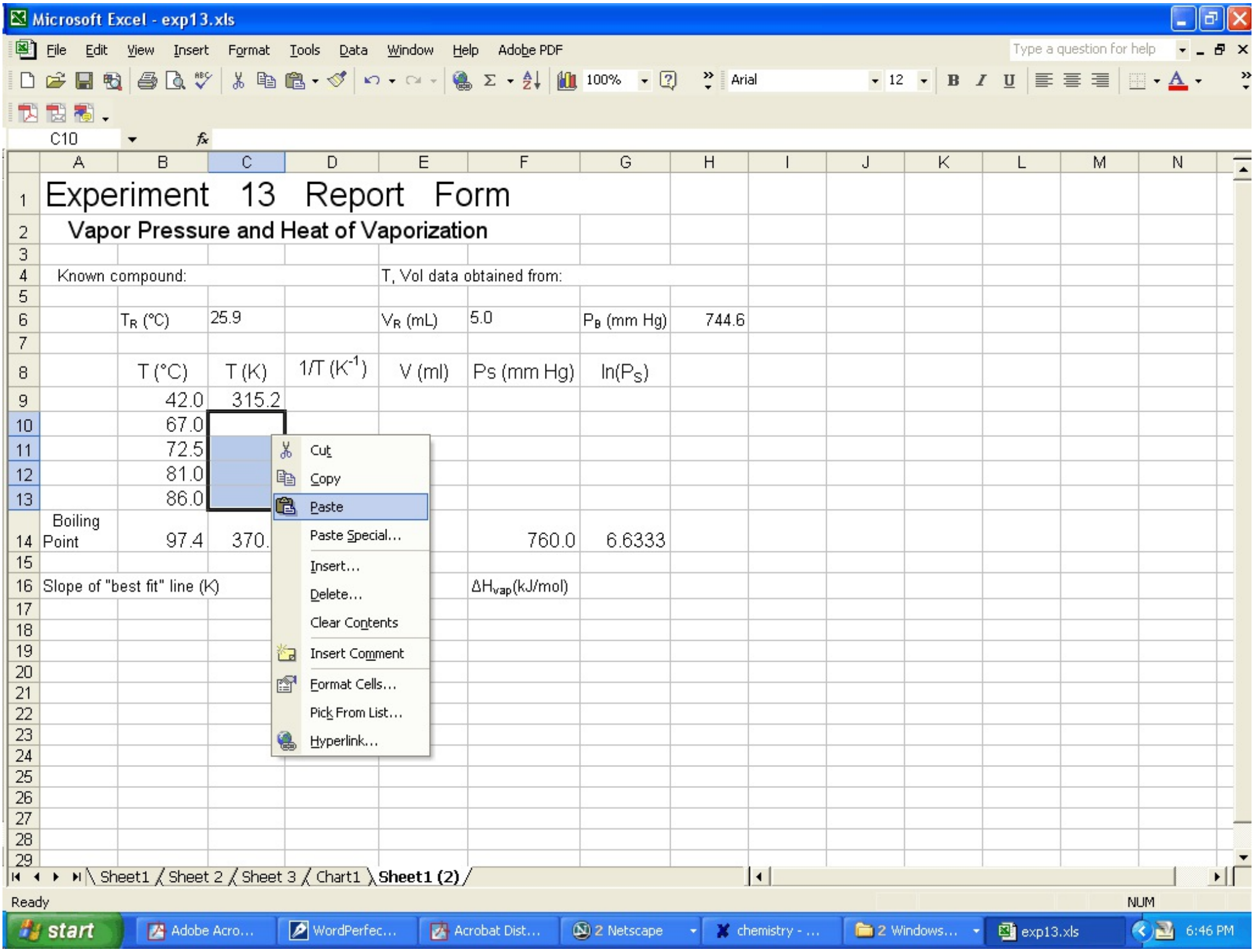
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Arial 12
C10
Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound:
T, Vol data obtained from:
$T_R$ (°C) 25.9
$V_R$ (mL) 5.0
$P_B$ (mm Hg) 744.6
T (°C) T (K) 1/T ($K^{-1}$) V (ml) Ps (mm Hg) ln($P_S$)
42.0 315.2
67.0
72.5
81.0
86.0
Boiling Point 97.4 370. 760.0 6.6333
Slope of "best fit" line (K)
$\Delta H_{vap}$(kJ/mol)
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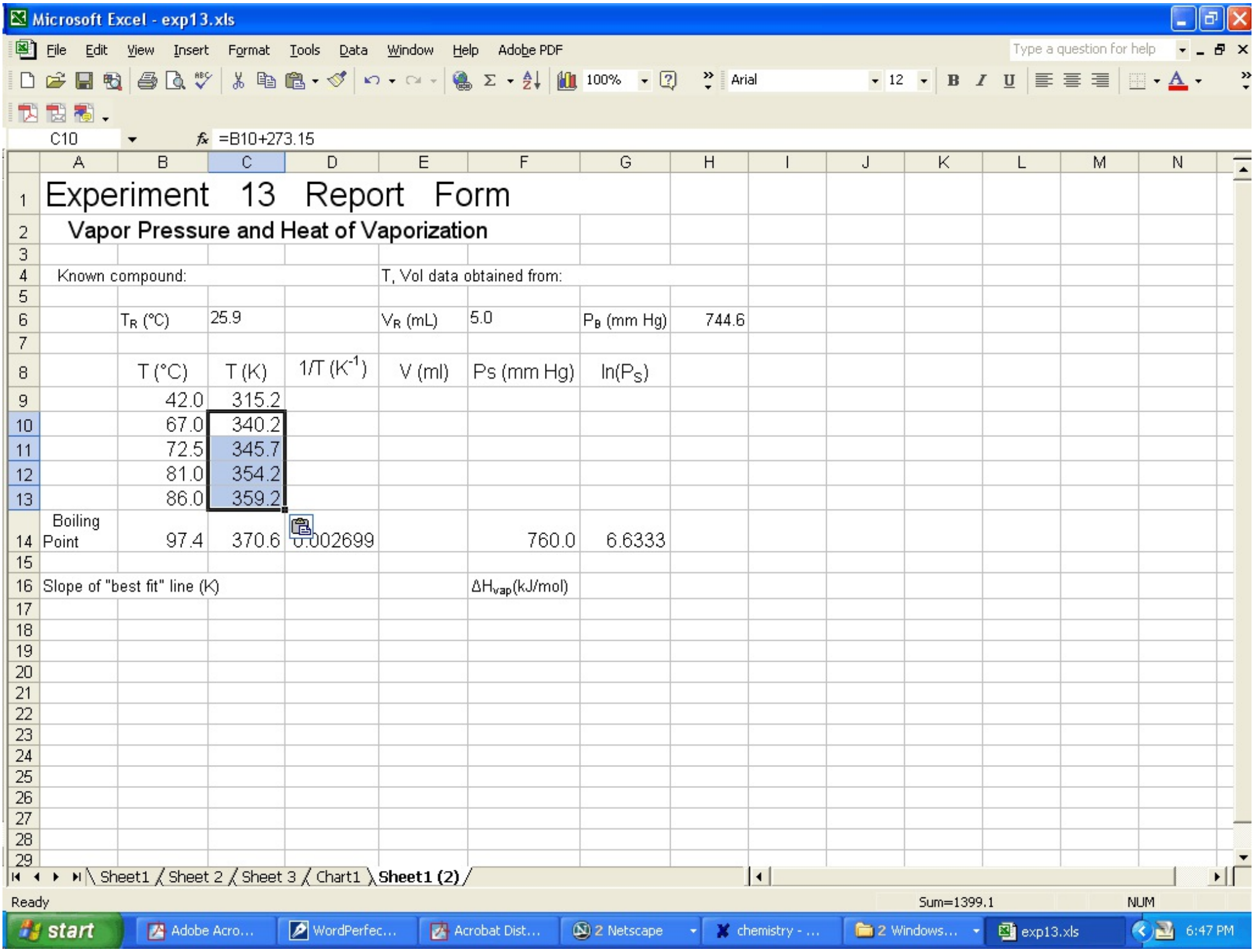
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C10 =B10+273.15
Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound:
T, Vol data obtained from:
$T_R$ (°C) 25.9
$V_R$ (mL) 5.0
$P_B$ (mm Hg) 744.6
T (°C) T (K) 1/T ($K^{-1}$) V (ml) Ps (mm Hg) ln($P_S$)
42.0 315.2
67.0 340.2
72.5 345.7
81.0 354.2
86.0 359.2
Boiling Point 97.4 370.6 0.002699 760.0 6.6333
Slope of "best fit" line (K)
$\Delta H_{vap}$(kJ/mol)
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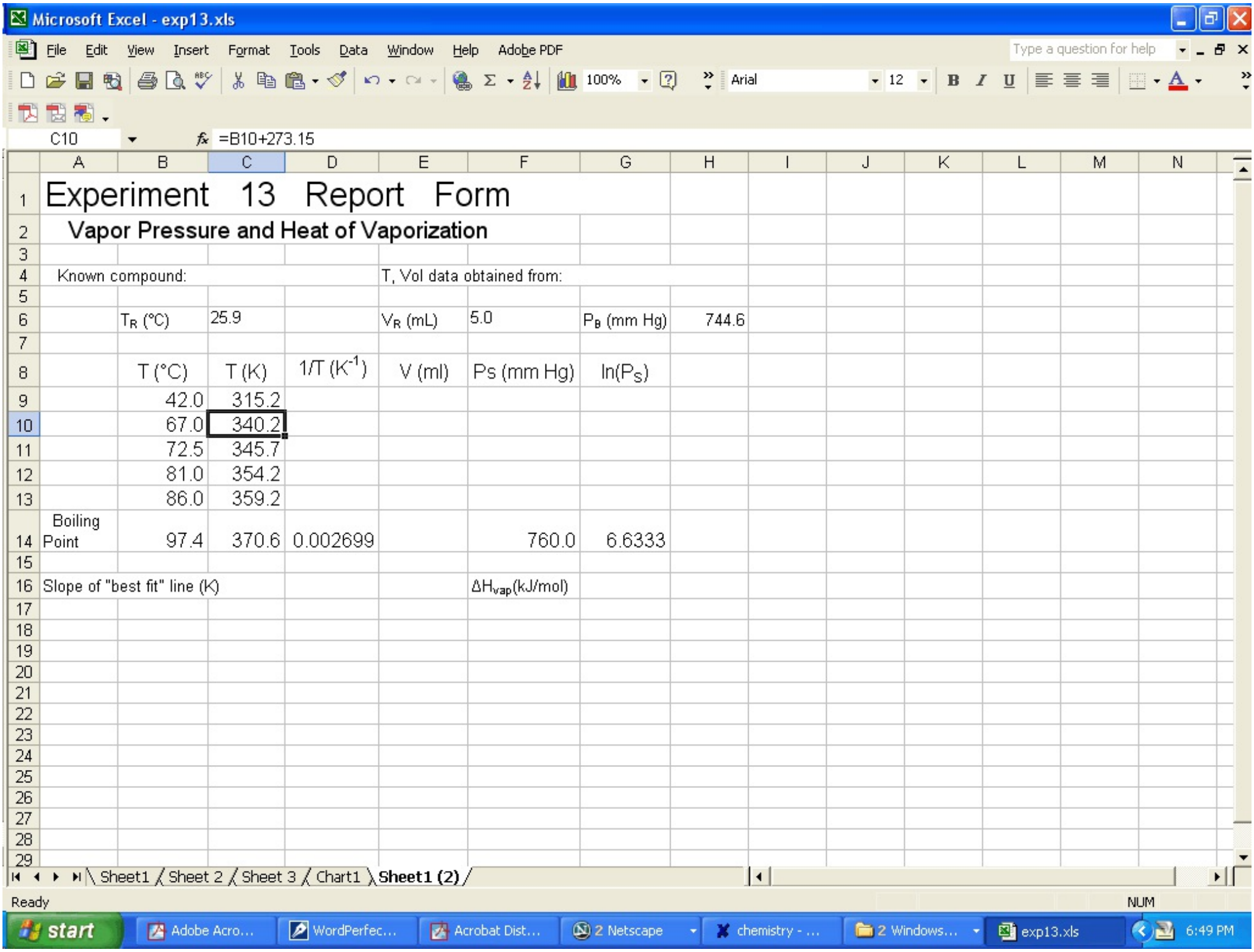
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C10 =B10+273.15
Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound:
T, Vol data obtained from:
TR (°C) 25.9
VR (mL) 5.0
PB (mm Hg) 744.6
T (°C) T (K) 1/T (K-1) V (ml) Ps (mm Hg) ln(PS)
42.0 315.2
67.0 340.2
72.5 345.7
81.0 354.2
86.0 359.2
Boiling Point 97.4 370.6 0.002699 760.0 6.6333
Slope of "best fit" line (K)
ΔHvap(kJ/mol)
Sheet1 Sheet 2 Sheet 3 Chart1 Sheet1 (2)
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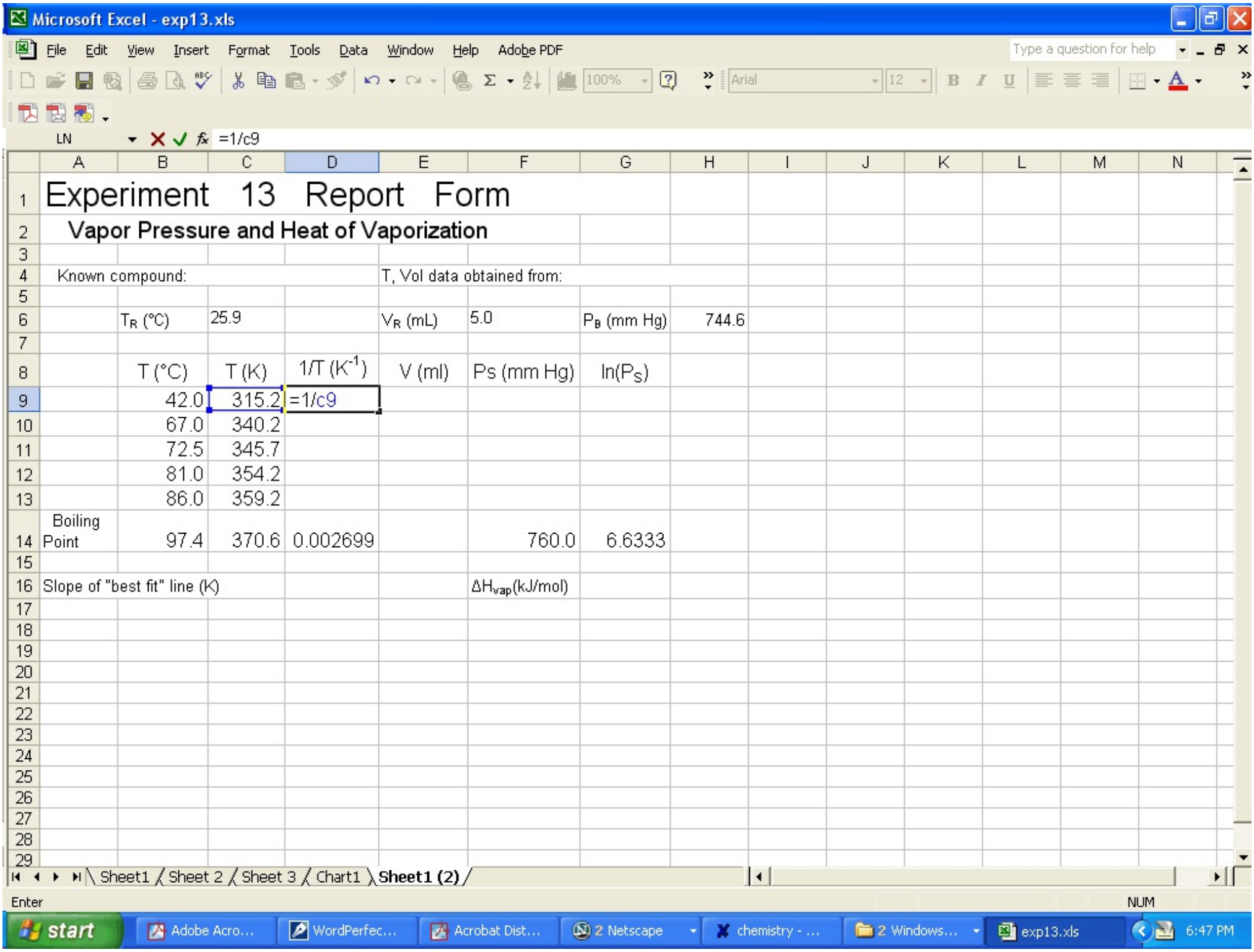
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Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound:
T, Vol data obtained from:
TR (°C) 25.9
VR (mL) 5.0
PB (mm Hg) 744.6
T (°C) T (K) 1/T (K-1) V (ml) Ps (mm Hg) ln(PS)
42.0 315.2 =1/c9
67.0 340.2
72.5 345.7
81.0 354.2
86.0 359.2
Boiling Point 97.4 370.6 0.002699 760.0 6.6333
Slope of "best fit" line (K)
ΔHvap(kJ/mol)
Sheet1 Sheet 2 Sheet 3 Chart1 Sheet1 (2)
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D10

# Experiment 13 Report Form

## Vapor Pressure and Heat of Vaporization

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Known compound: | | | | T, Vol data obtained from: | | | |
| | $T_R$ (°C) | 25.9 | | $V_R$ (mL) | 5.0 | $P_B$ (mm Hg) | 744.6 |
| | T (°C) | T (K) | 1/T ($K^{-1}$) | V (ml) | Ps (mm Hg) | ln($P_S$) | |
| | 42.0 | 315.2 | 0.003173 | | | | |
| | 67.0 | 340.2 | | | | | |
| | 72.5 | 345.7 | | | | | |
| | 81.0 | 354.2 | | | | | |
| | 86.0 | 359.2 | | | | | |
| Boiling Point | 97.4 | 370.6 | 0.002699 | | 760.0 | 6.6333 | |
| Slope of "best fit" line (K) | | | | | $\Delta H_{vap}$(kJ/mol) | | |

Sheet1 Sheet 2 Sheet 3 Chart1 Sheet1 (2)

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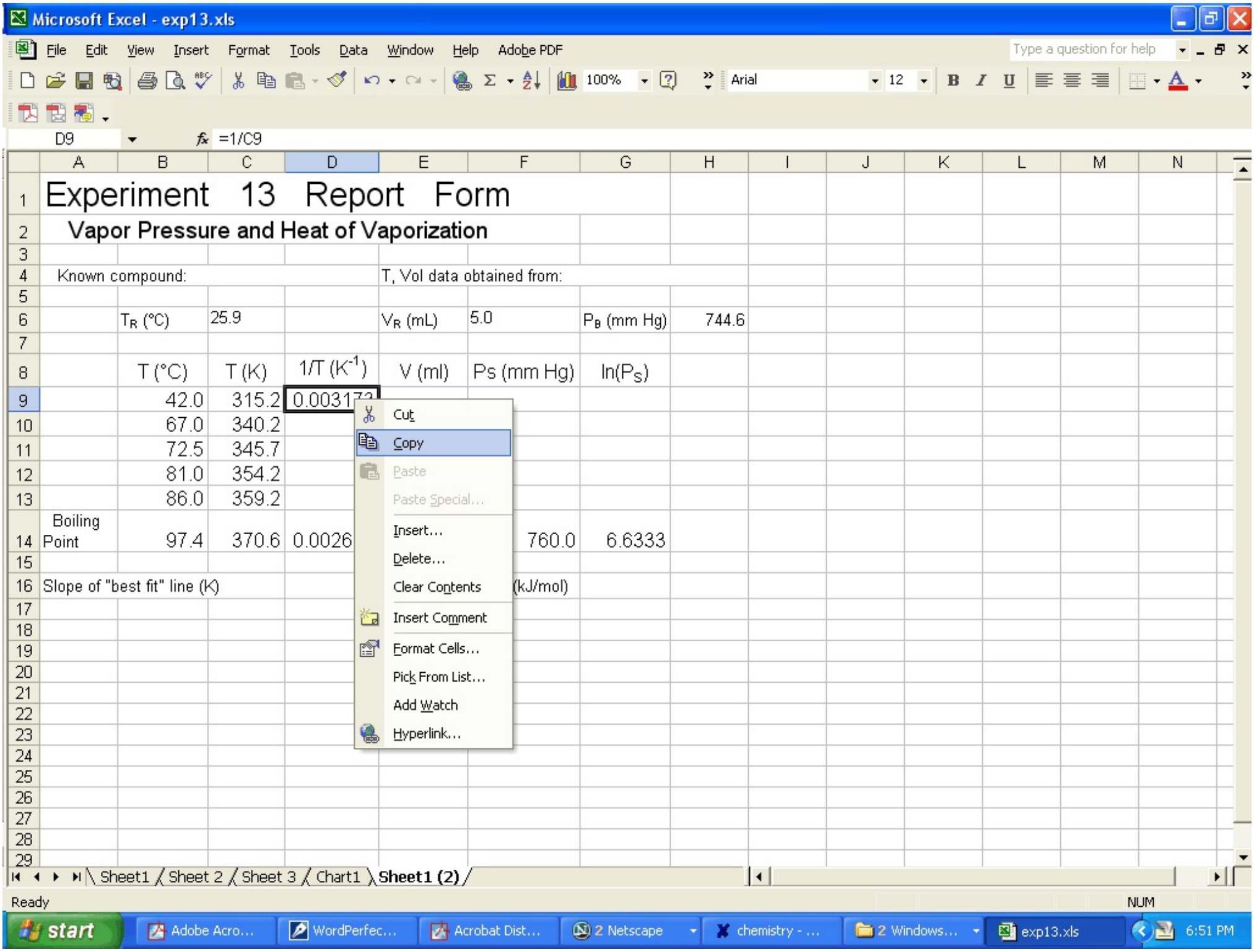
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D9 =1/C9
Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound:
T, Vol data obtained from:
TR (°C) 25.9
VR (mL) 5.0
PB (mm Hg) 744.6
T (°C) T (K) 1/T (K-1) V (ml) Ps (mm Hg) ln(PS)
42.0 315.2 0.003172
67.0 340.2
72.5 345.7
81.0 354.2
86.0 359.2
Boiling Point 97.4 370.6 0.0026 760.0 6.6333
Slope of "best fit" line (K) (kJ/mol)
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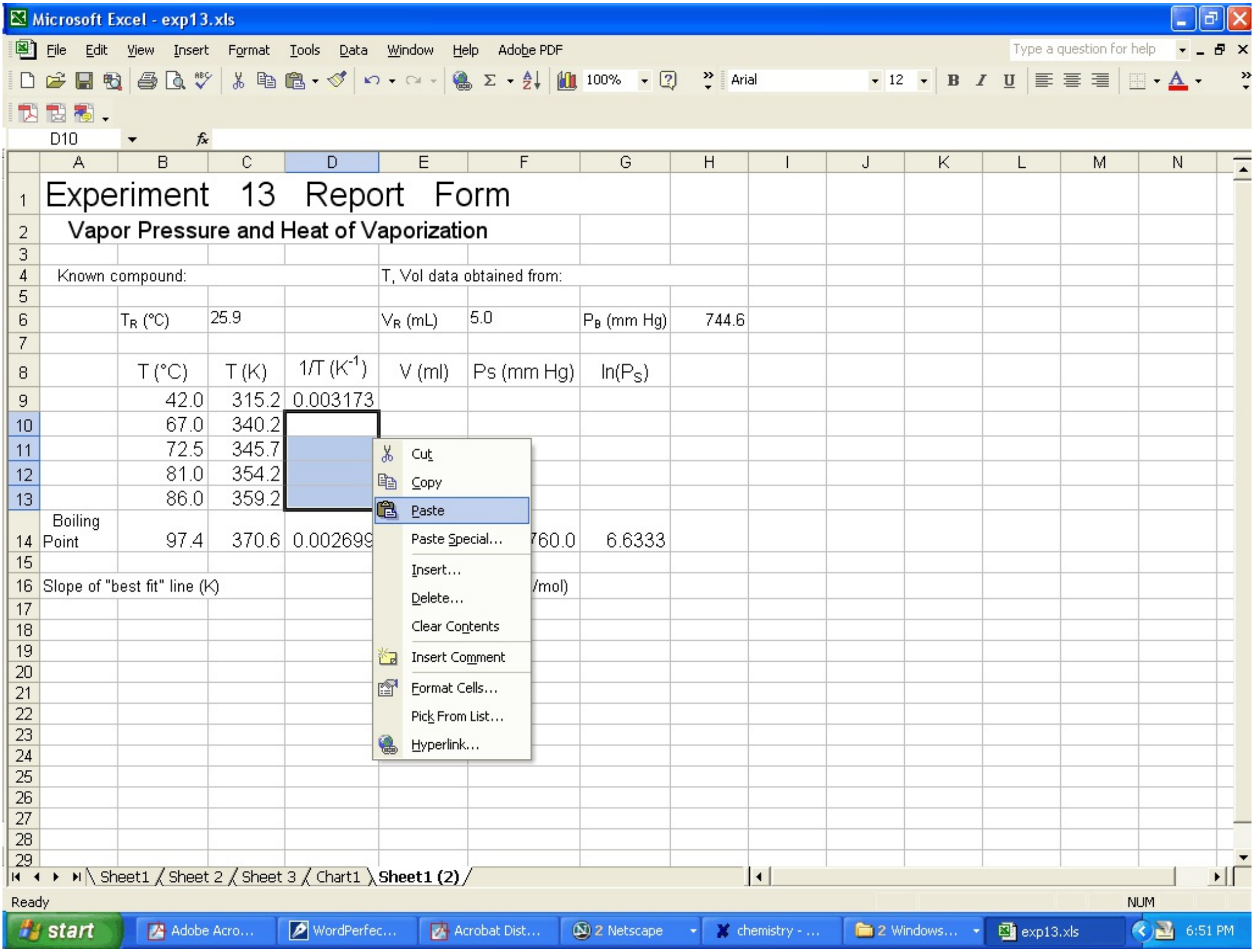
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Arial 12
D10
Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound:
T, Vol data obtained from:
$T_R$ (°C) 25.9
$V_R$ (mL) 5.0
$P_B$ (mm Hg) 744.6
T (°C) T (K) 1/T ($K^{-1}$) V (ml) Ps (mm Hg) ln($P_S$)
42.0 315.2 0.003173
67.0 340.2
72.5 345.7
81.0 354.2
86.0 359.2
Boiling Point 97.4 370.6 0.002699
760.0 6.6333
Slope of "best fit" line (K)
/mol)
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D10 =1/C10

# Experiment 13 Report Form

## Vapor Pressure and Heat of Vaporization

Known compound:

T, Vol data obtained from:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | $T_R$ (°C) | 25.9 | | $V_R$ (mL) | 5.0 | $P_B$ (mm Hg) | 744.6 |

| | T (°C) | T (K) | 1/T ($K^{-1}$) | V (ml) | Ps (mm Hg) | ln($P_S$) |
|---|---|---|---|---|---|---|
| | 42.0 | 315.2 | 0.003173 | | | |
| | 67.0 | 340.2 | 0.002940 | | | |
| | 72.5 | 345.7 | 0.002893 | | | |
| | 81.0 | 354.2 | 0.002824 | | | |
| | 86.0 | 359.2 | 0.002784 | | | |
| Boiling Point | 97.4 | 370.6 | 0.002699 | | 760.0 | 6.6333 |

Slope of "best fit" line (K) $\Delta H_{vap}$(kJ/mol)

Sheet1 Sheet 2 Sheet 3 Chart1 Sheet1 (2)

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Microsoft Excel - exp13.xls

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D10 =1/C10

# Experiment 13 Report Form

## Vapor Pressure and Heat of Vaporization

Known compound:

$T_R$ (°C) 25.9

T, Vol data obtained from:

$V_R$ (mL) 5.0

$P_B$ (mm Hg) 744.6

| | T (°C) | T (K) | 1/T ($K^{-1}$) | V (ml) | Ps (mm Hg) | ln($P_S$) |
|---|---|---|---|---|---|---|
| | 42.0 | 315.2 | 0.003173 | | | |
| | 67.0 | 340.2 | 0.002940 | | | |
| | 72.5 | 345.7 | 0.002893 | | | |
| | 81.0 | 354.2 | 0.002824 | | | |
| | 86.0 | 359.2 | 0.002784 | | | |
| Boiling Point | 97.4 | 370.6 | 0.002699 | | 760.0 | 6.6333 |

Slope of "best fit" line (K)

$\Delta H_{vap}$(kJ/mol)

Sheet1 Sheet 2 Sheet 3 Chart1 Sheet1 (2)

Ready NUM

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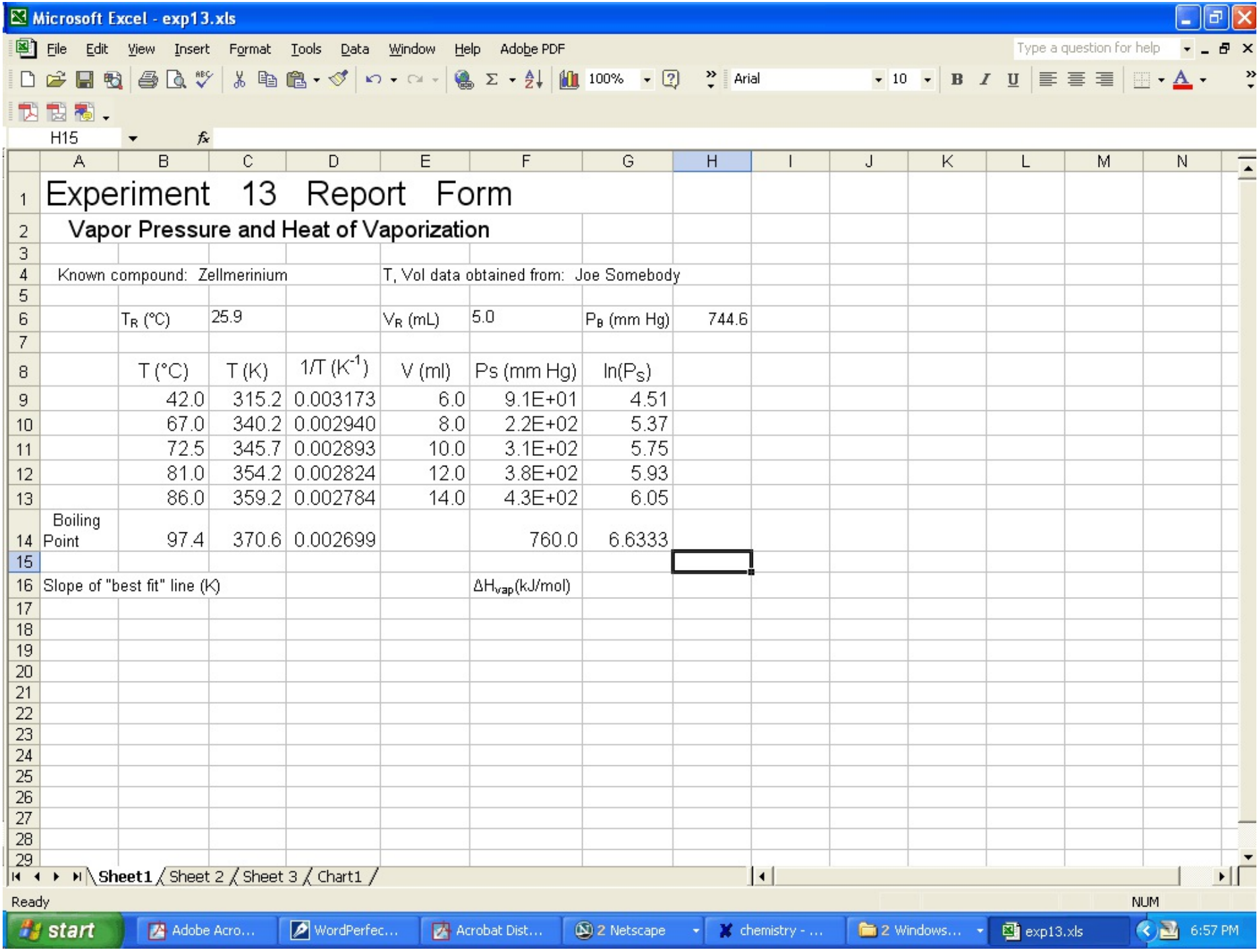
Continue in this way. Program eqn 6 from the lab manual into the column for Ps and then take ln(P) for the next column (enter "=ln(f9)") and then copy this formula into the remaining cells. The "finished" sheet for cmpd 1 is below



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H15

# Experiment 13 Report Form

## Vapor Pressure and Heat of Vaporization

Known compound: Zellmerinium

T, Vol data obtained from: Joe Somebody

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | $T_R$ (°C) | 25.9 | | $V_R$ (mL) | 5.0 | $P_B$ (mm Hg) | 744.6 |
| | T (°C) | T (K) | 1/T ($K^{-1}$) | V (ml) | Ps (mm Hg) | ln($P_S$) | |
| | 42.0 | 315.2 | 0.003173 | 6.0 | 9.1E+01 | 4.51 | |
| | 67.0 | 340.2 | 0.002940 | 8.0 | 2.2E+02 | 5.37 | |
| | 72.5 | 345.7 | 0.002893 | 10.0 | 3.1E+02 | 5.75 | |
| | 81.0 | 354.2 | 0.002824 | 12.0 | 3.8E+02 | 5.93 | |
| | 86.0 | 359.2 | 0.002784 | 14.0 | 4.3E+02 | 6.05 | |
| Boiling Point | 97.4 | 370.6 | 0.002699 | | 760.0 | 6.6333 | |

Slope of "best fit" line (K) | $\Delta H_{vap}$(kJ/mol)

Sheet1 Sheet 2 Sheet 3 Chart1

Ready NUM

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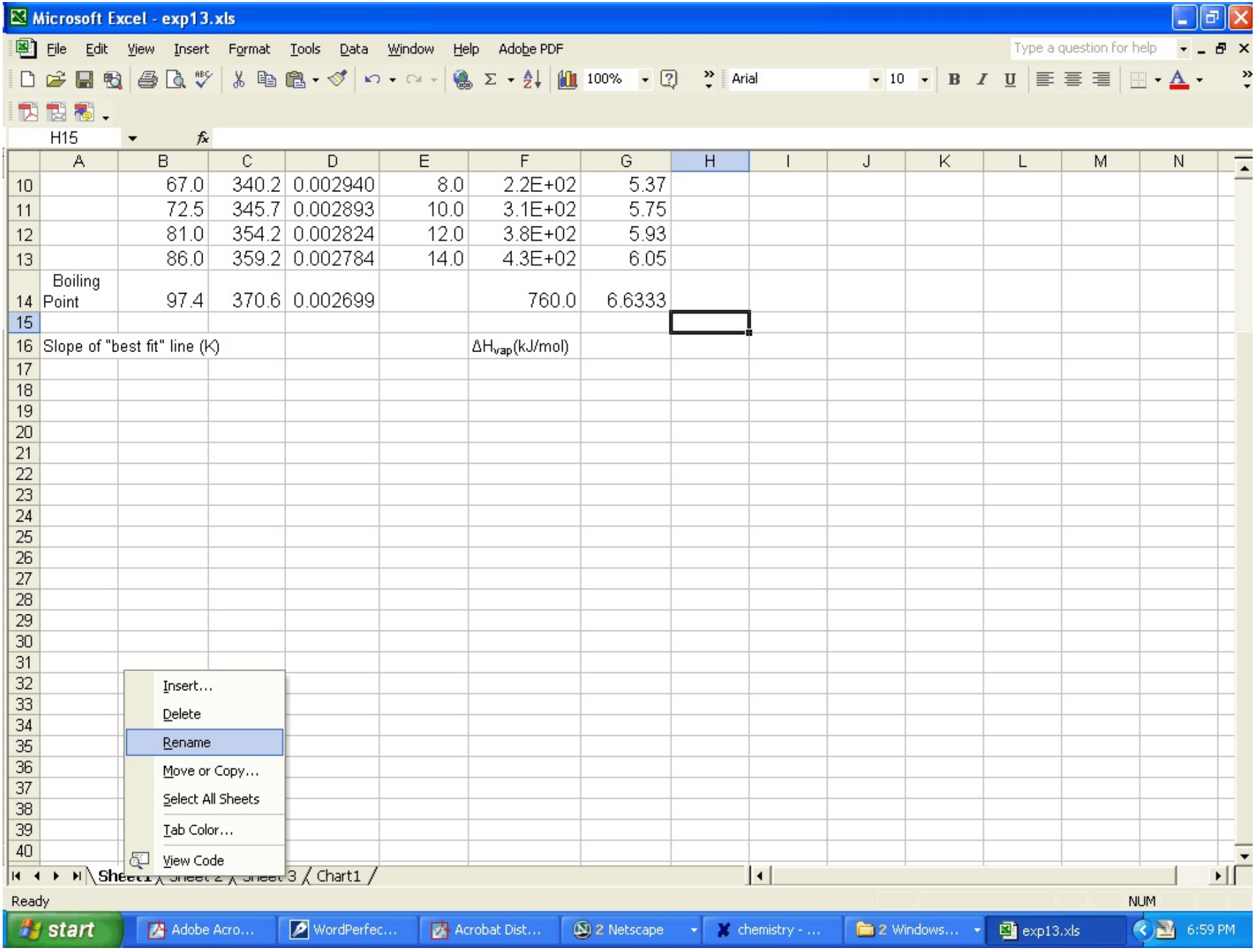
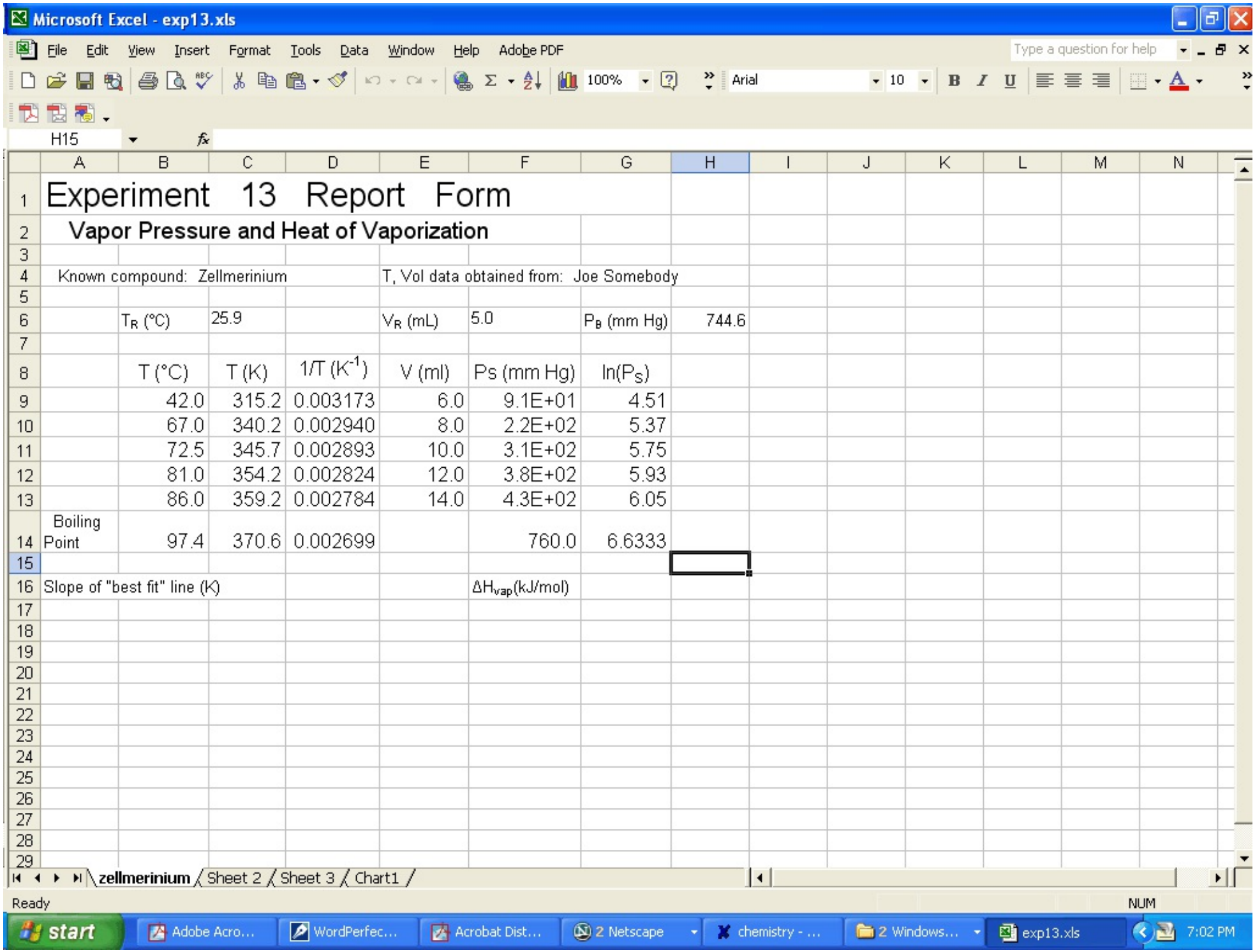



| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 10 | | 67.0 | 340.2 | 0.002940 | 8.0 | 2.2E+02 | 5.37 |
| 11 | | 72.5 | 345.7 | 0.002893 | 10.0 | 3.1E+02 | 5.75 |
| 12 | | 81.0 | 354.2 | 0.002824 | 12.0 | 3.8E+02 | 5.93 |
| 13 | | 86.0 | 359.2 | 0.002784 | 14.0 | 4.3E+02 | 6.05 |
| 14 | Boiling Point | 97.4 | 370.6 | 0.002699 | | 760.0 | 6.6333 |
| 15 | | | | | | | |
| 16 | Slope of "best fit" line (K) | | | | | $\Delta H_{vap}$(kJ/mol) | |


Microsoft Excel - exp13.xls
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Arial
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H15
Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound: Zellmerinium
T, Vol data obtained from: Joe Somebody
T_R (°C) 25.9
V_R (mL) 5.0
P_B (mm Hg) 744.6
T (°C) T (K) 1/T (K^-1) V (ml) Ps (mm Hg) ln(P_S)
42.0 315.2 0.003173 6.0 9.1E+01 4.51
67.0 340.2 0.002940 8.0 2.2E+02 5.37
72.5 345.7 0.002893 10.0 3.1E+02 5.75
81.0 354.2 0.002824 12.0 3.8E+02 5.93
86.0 359.2 0.002784 14.0 4.3E+02 6.05
Boiling Point 97.4 370.6 0.002699 760.0 6.6333
Slope of "best fit" line (K)
ΔH_vap(kJ/mol)
zellmerinium Sheet 2 Sheet 3 Chart1
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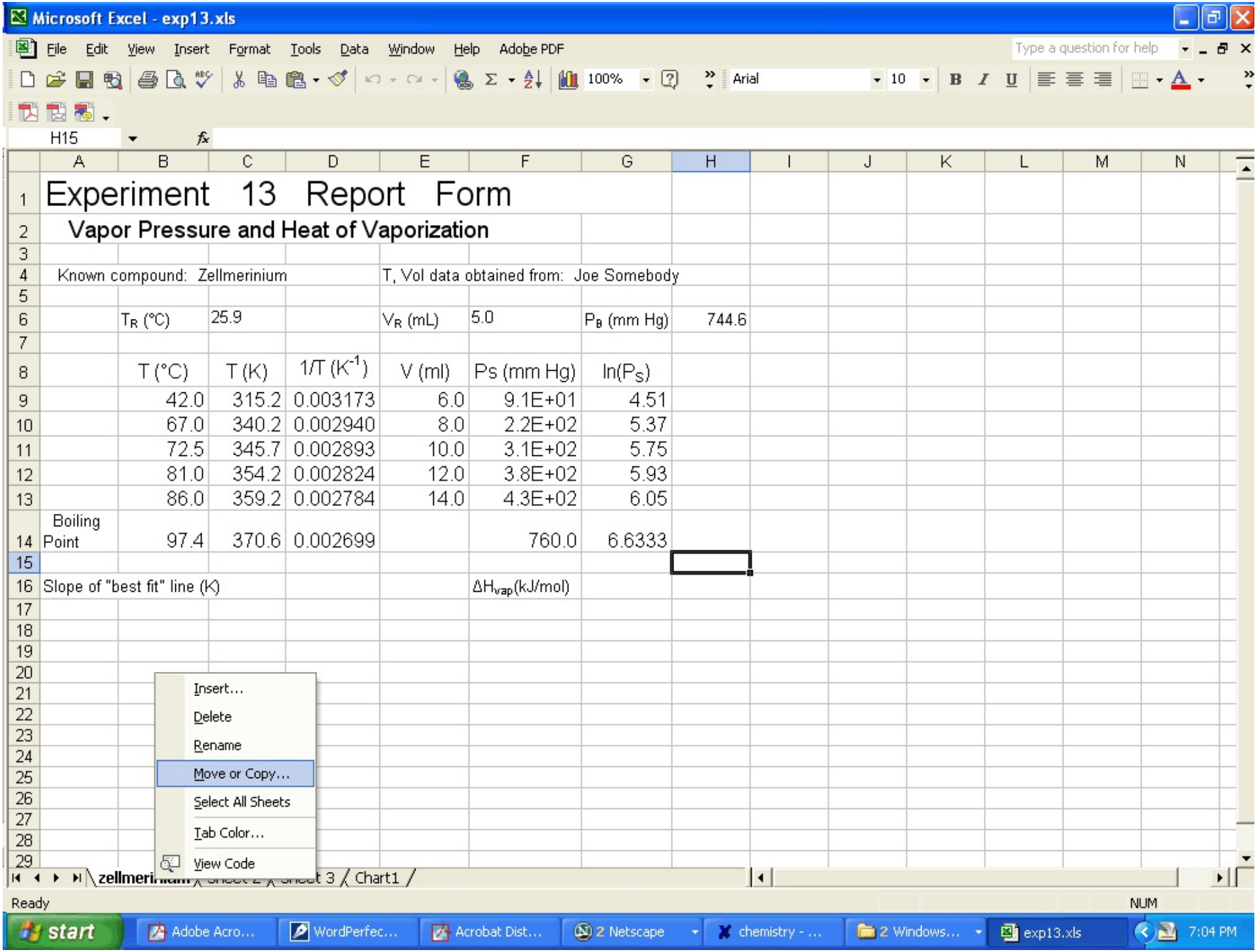
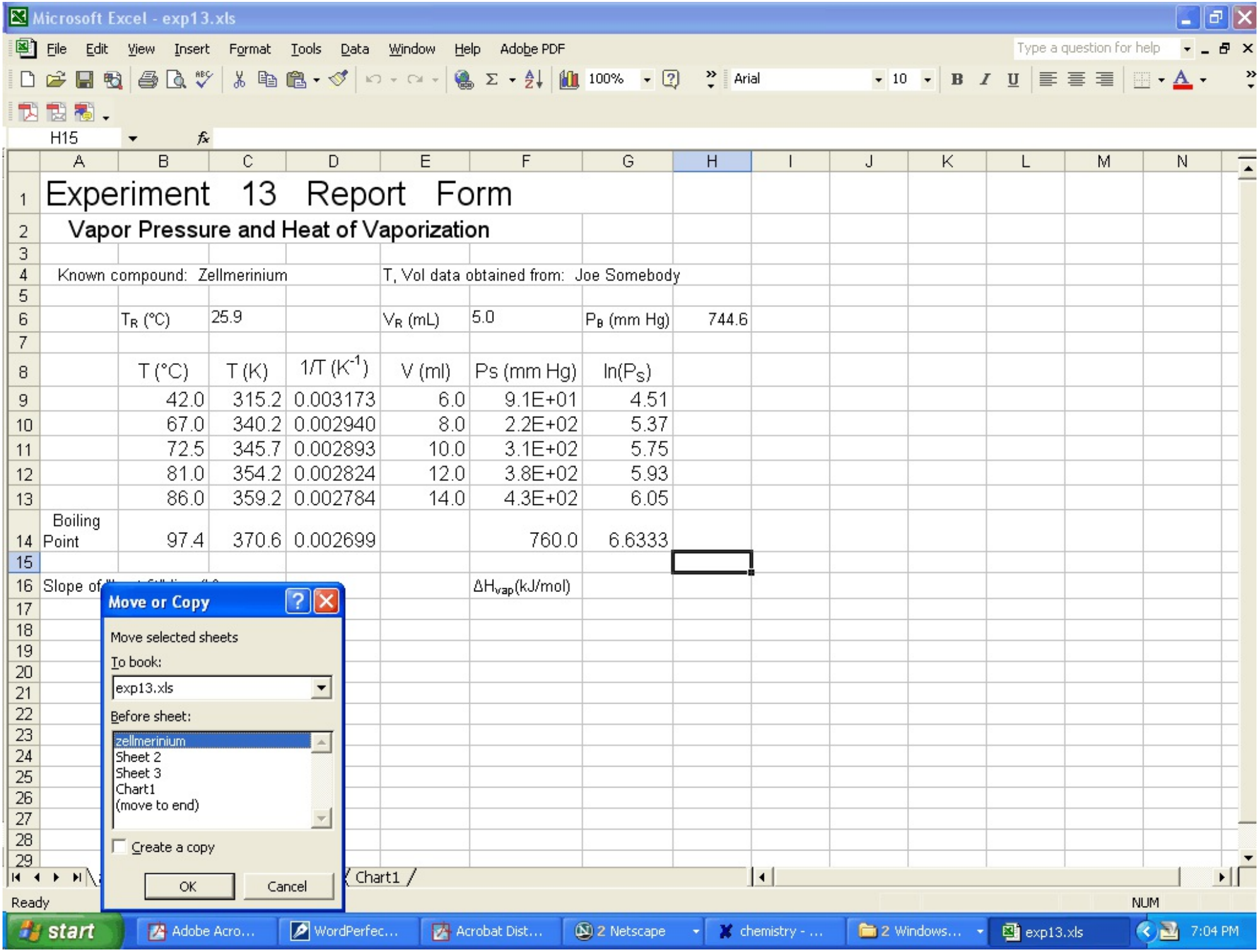
Then copy this sheet to a new sheet for the data for compound 2. "Right click" on the tab and choose "Move or Copy".

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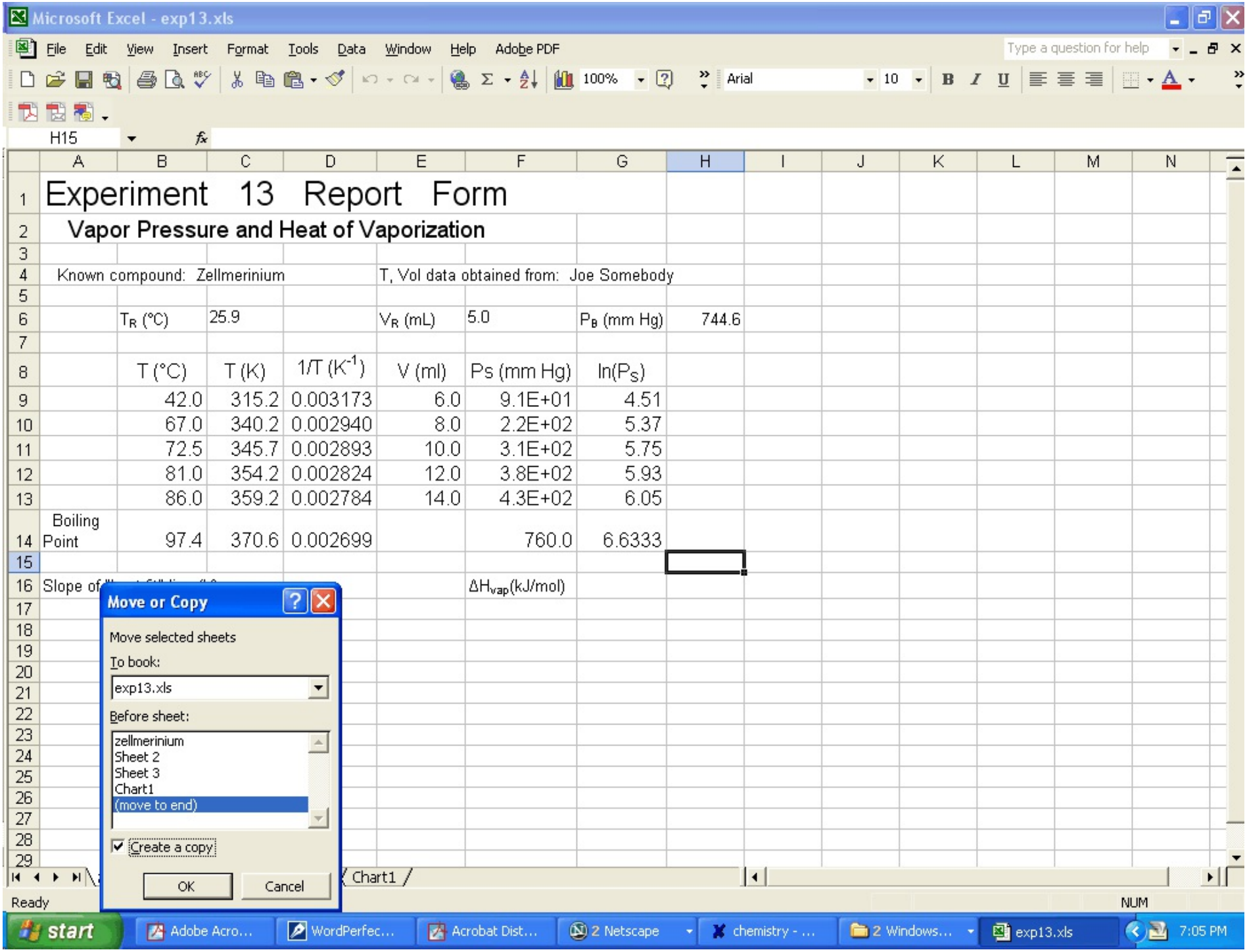
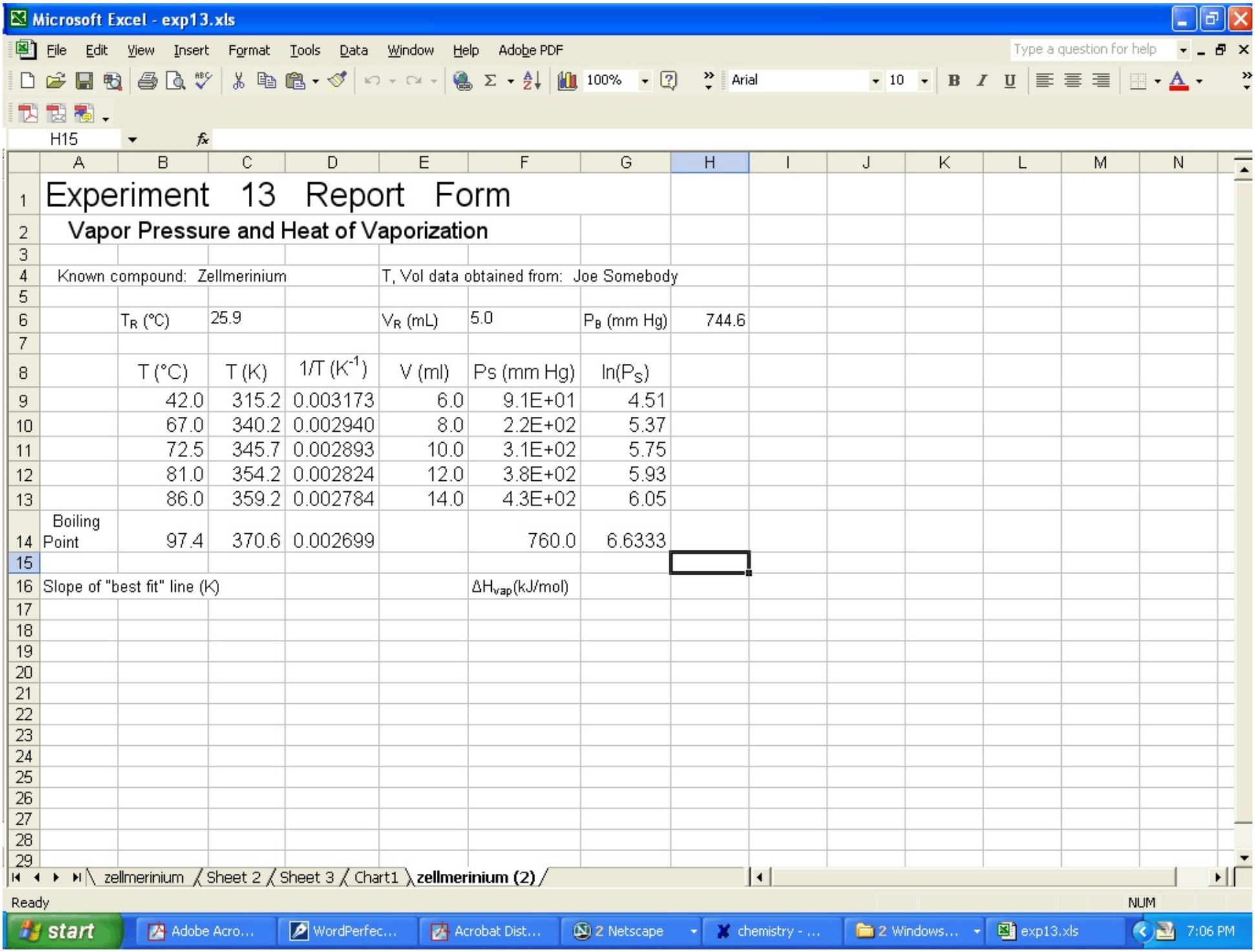
File Edit View Insert Format Tools Data Window Help Adobe PDF
Type a question for help
H15
Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound: Zellmerinium
T, Vol data obtained from: Joe Somebody
T_R (°C) 25.9
V_R (mL) 5.0
P_B (mm Hg) 744.6
T (°C) T (K) 1/T (K^-1) V (ml) Ps (mm Hg) ln(P_S)
42.0 315.2 0.003173 6.0 9.1E+01 4.51
67.0 340.2 0.002940 8.0 2.2E+02 5.37
72.5 345.7 0.002893 10.0 3.1E+02 5.75
81.0 354.2 0.002824 12.0 3.8E+02 5.93
86.0 359.2 0.002784 14.0 4.3E+02 6.05
Boiling Point 97.4 370.6 0.002699 760.0 6.6333
Slope of
ΔH_vap(kJ/mol)
Move or Copy
Move selected sheets
To book:
exp13.xls
Before sheet:
zellmerinium
Sheet 2
Sheet 3
Chart1
(move to end)
Create a copy
OK
Cancel
Chart1
Ready
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
7:04 PM

Note you want to highlight “move to end” and check the “create a copy” box.



I get a new sheet with the same name but the # 2 at the end of the name. Note the data right now is the same as for the first sheet.



Microsoft Excel - exp13.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

H15

# Experiment 13 Report Form

## Vapor Pressure and Heat of Vaporization

Known compound: Zellmerinium

T, Vol data obtained from: Joe Somebody

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | $T_R$ (°C) | 25.9 | | $V_R$ (mL) | 5.0 | $P_B$ (mm Hg) | 744.6 |

| | T (°C) | T (K) | 1/T ($K^{-1}$) | V (ml) | Ps (mm Hg) | ln($P_S$) |
|---|---|---|---|---|---|---|
| | 42.0 | 315.2 | 0.003173 | 6.0 | 9.1E+01 | 4.51 |
| | 67.0 | 340.2 | 0.002940 | 8.0 | 2.2E+02 | 5.37 |
| | 72.5 | 345.7 | 0.002893 | 10.0 | 3.1E+02 | 5.75 |
| | 81.0 | 354.2 | 0.002824 | 12.0 | 3.8E+02 | 5.93 |
| | 86.0 | 359.2 | 0.002784 | 14.0 | 4.3E+02 | 6.05 |
| Boiling Point | 97.4 | 370.6 | 0.002699 | | 760.0 | 6.6333 |

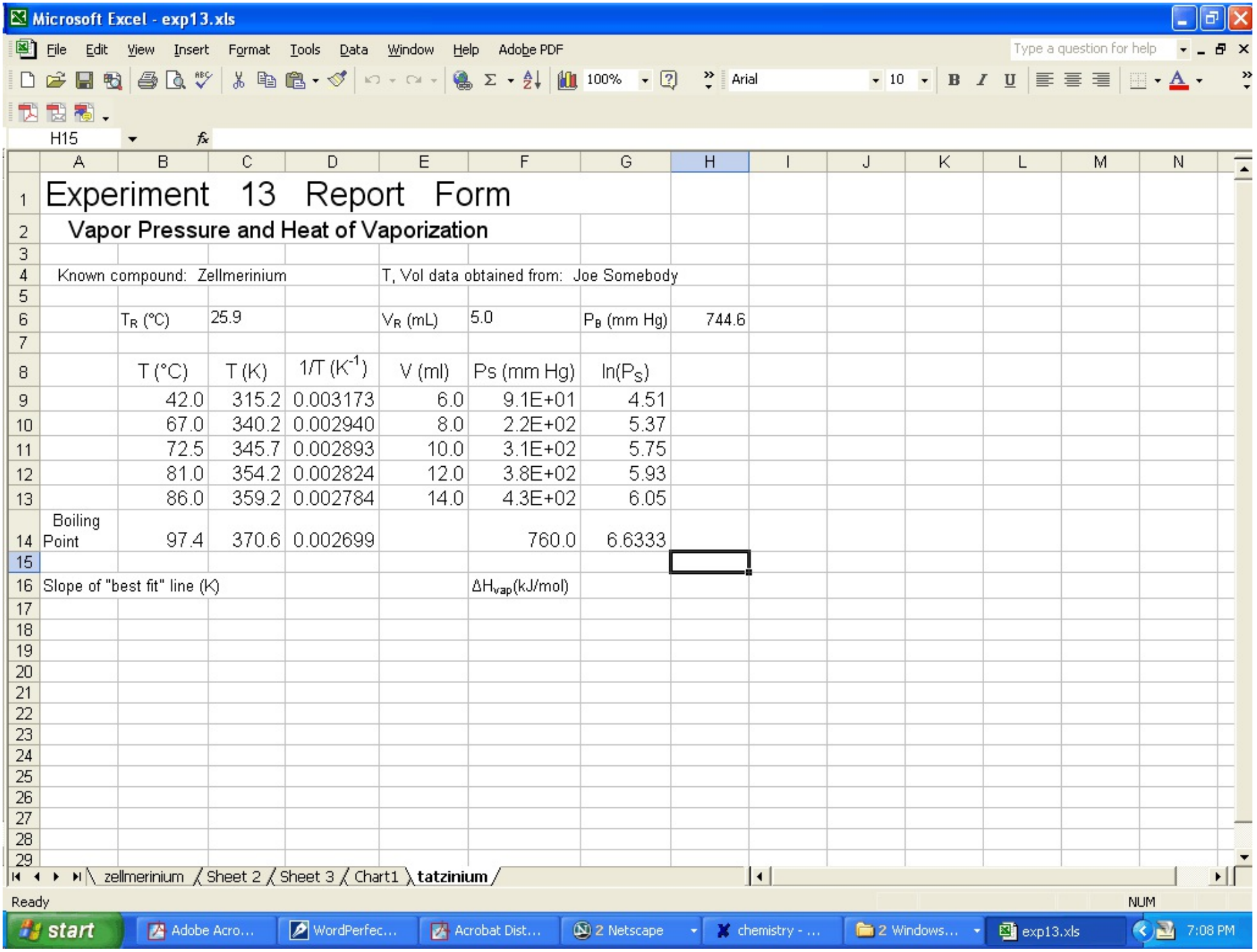
Slope of "best fit" line (K) | $\Delta H_{vap}$(kJ/mol)

zellmerinium | Sheet 2 | Sheet 3 | Chart1 | zellmerinium (2)

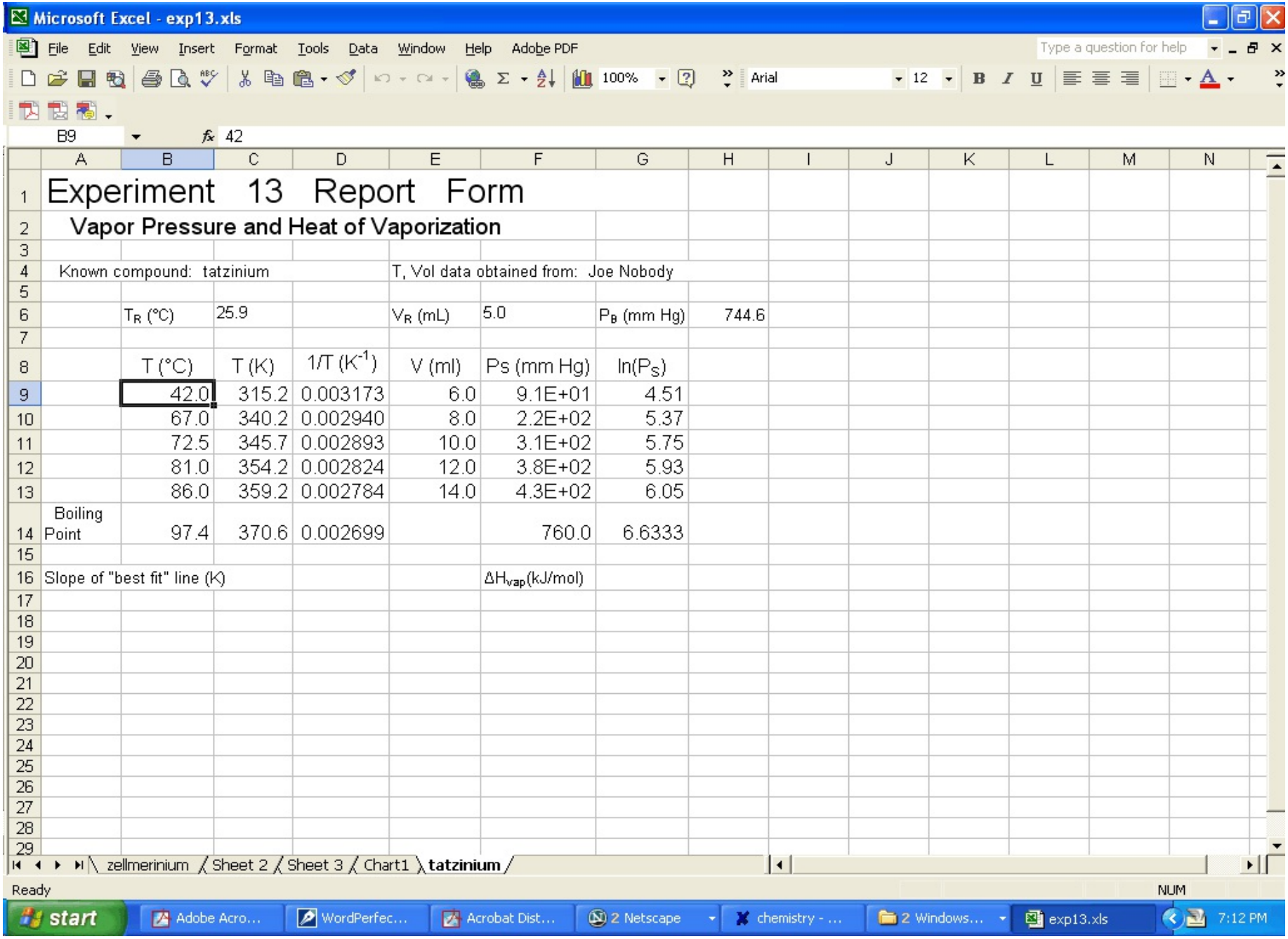
Ready NUM

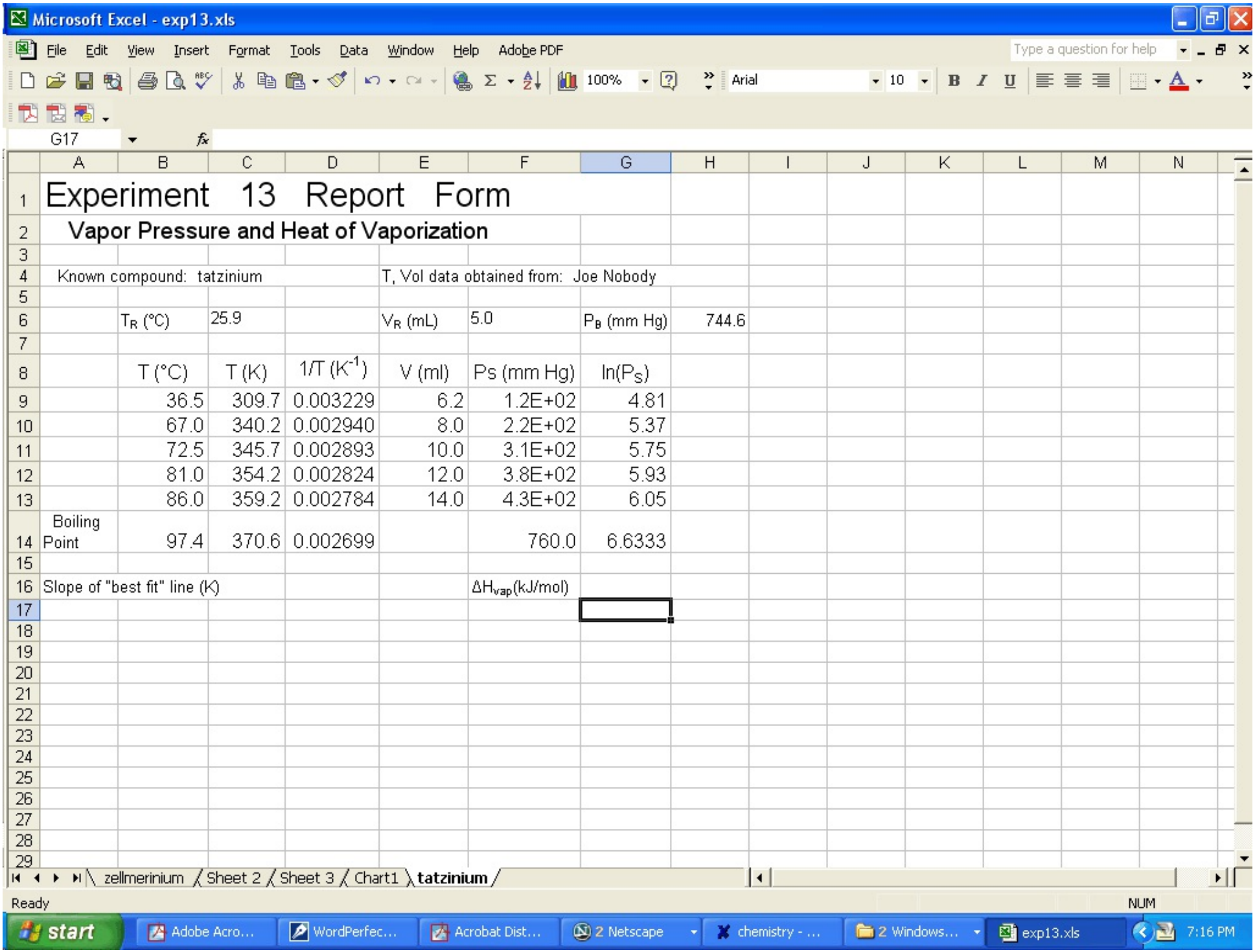
start | Adobe Acro... | WordPerfec... | Acrobat Dist... | 2 Netscape | chemistry - ... | 2 Windows... | exp13.xls | 7:06 PM

Rename the sheet with the name for compound 2.



Now go in and start changing the temp and volume. You will notice the data in the other columns starts changing automatically because the equations are the same as for the first compound (the room temp and volume and barometric pressure values may be a little different from each of you so those would have to be changed in the equation for Ps). Change 42.0 to 36.5 for the temp and change the volume from 6.0 to 6.2. Note the other changes that take place.




Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Data Window Help Adobe PDF
Type a question for help
100%
Arial
10
G17
Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound: tatzinium
T, Vol data obtained from: Joe Nobody
T_R (°C) 25.9
V_R (mL) 5.0
P_B (mm Hg) 744.6
T (°C) T (K) 1/T (K^-1) V (ml) Ps (mm Hg) ln(P_S)
36.5 309.7 0.003229 6.2 1.2E+02 4.81
67.0 340.2 0.002940 8.0 2.2E+02 5.37
72.5 345.7 0.002893 10.0 3.1E+02 5.75
81.0 354.2 0.002824 12.0 3.8E+02 5.93
86.0 359.2 0.002784 14.0 4.3E+02 6.05
Boiling Point 97.4 370.6 0.002699 760.0 6.6333
Slope of "best fit" line (K)
ΔH_vap(kJ/mol)
zellmerinium Sheet 2 Sheet 3 Chart1 tatzinium
Ready
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
7:16 PM

Do the same for the other temp and volumes for this compound. Then do the 3rd compound.

I'm including a sample graph for you to get an idea of what it should look like. Your graph should be as a separate chart so it takes up a whole page. It will give a better idea of what it will look like on the page. The graphs are on the next pages.

To do a graph highlight the 'x' values, 1/T. Then hold the control key and highlight the 'y' values, ln(P). Then click on the "chart wizard" icon at the top. Then choose scatter graph with no connecting lines and go through the next few screens. Save it as a 'Chart' in a new sheet. Then change the grey background to white (it's easier to see the points and won't waste a lot of your printer ink) right clicking in the chart area and then clicking on "Format Plot Area" in the pop-up box and then choose "none" for the 'area' on the right-hand side.

Then change the scale of the y-axis to get rid of the empty space at the bottom of the graph (right click on the y-axis). You can wait to do this until you've put all 3 knowns on the graph. You don't want a lot of empty useless space on your graph (i.e. your points should occupy most of the plot area).

Then right click on a data point and a new menu box opens from which you can choose 'add trendline'. Choose 'linear'. Then click on the 'options' tab and click in the boxes to print the equation and $R^2$ value.

Don't forget to include a title for the graph and labels for the axes (including units). The y-axis, ln(P), doesn't technically have units. However, you can put the following, "ln(P) (P in torr)", using the what ever units you used for P.

You can change the font sizes for the labels of the tick marks (grid lines) by clicking on the appropriate axis. You can do the same for the graph and axis titles by clicking on the titles.

Microsoft Excel - exp13.xls

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Type a question for help

G9 =LN(F9)

# Experiment 13 Report Form

## Vapor Pressure and Heat of Vaporization

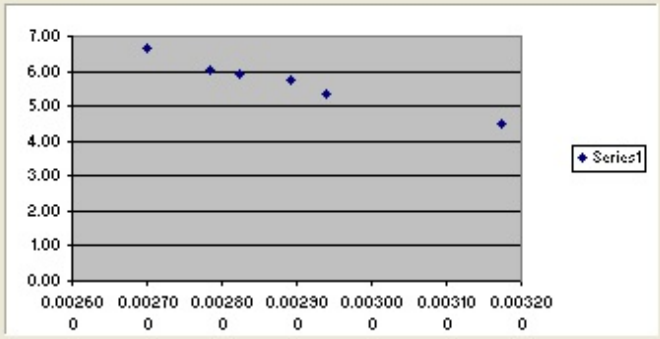
Known compound: Zellmerinium

T, Vol data obtained from: Joe Somebody

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 | | $T_R$ (°C) | 25.9 | | $V_R$ (mL) | 5.0 | $P_B$ (mm Hg) |
| 8 | | T (°C) | T (K) | 1/T ($K^{-1}$) | V (ml) | Ps (mm Hg) | ln($P_S$) |
| 9 | | 42.0 | 315.2 | 0.003173 | 6.0 | 9.1E+01 | 4.51 |
| 10 | | 67.0 | 340.2 | 0.002940 | 8.0 | 2.2E+02 | 5.37 |
| 11 | | 72.5 | 345.7 | 0.002893 | 10.0 | 3.1E+02 | 5.75 |
| 12 | | 81.0 | 354.2 | 0.002824 | 12.0 | 3.8E+02 | 5.93 |
| 13 | | 86.0 | 359.2 | 0.002784 | 14.0 | 4.3E+02 | 6.05 |
| 14 | Boiling Point | 97.4 | 370.6 | 0.002699 | | 760.0 | 6.6333 |
| 16 | Slope of "best fit" line (K) | | | | | $\Delta H_{vap}$(kJ/mol) | |

Chart Wizard - Step 2 of 4 - Chart Source Data

Data Range | Series




Data range: =zellmerinium!$D$9:$D$14,zellmerinium!$G$9:$G$14

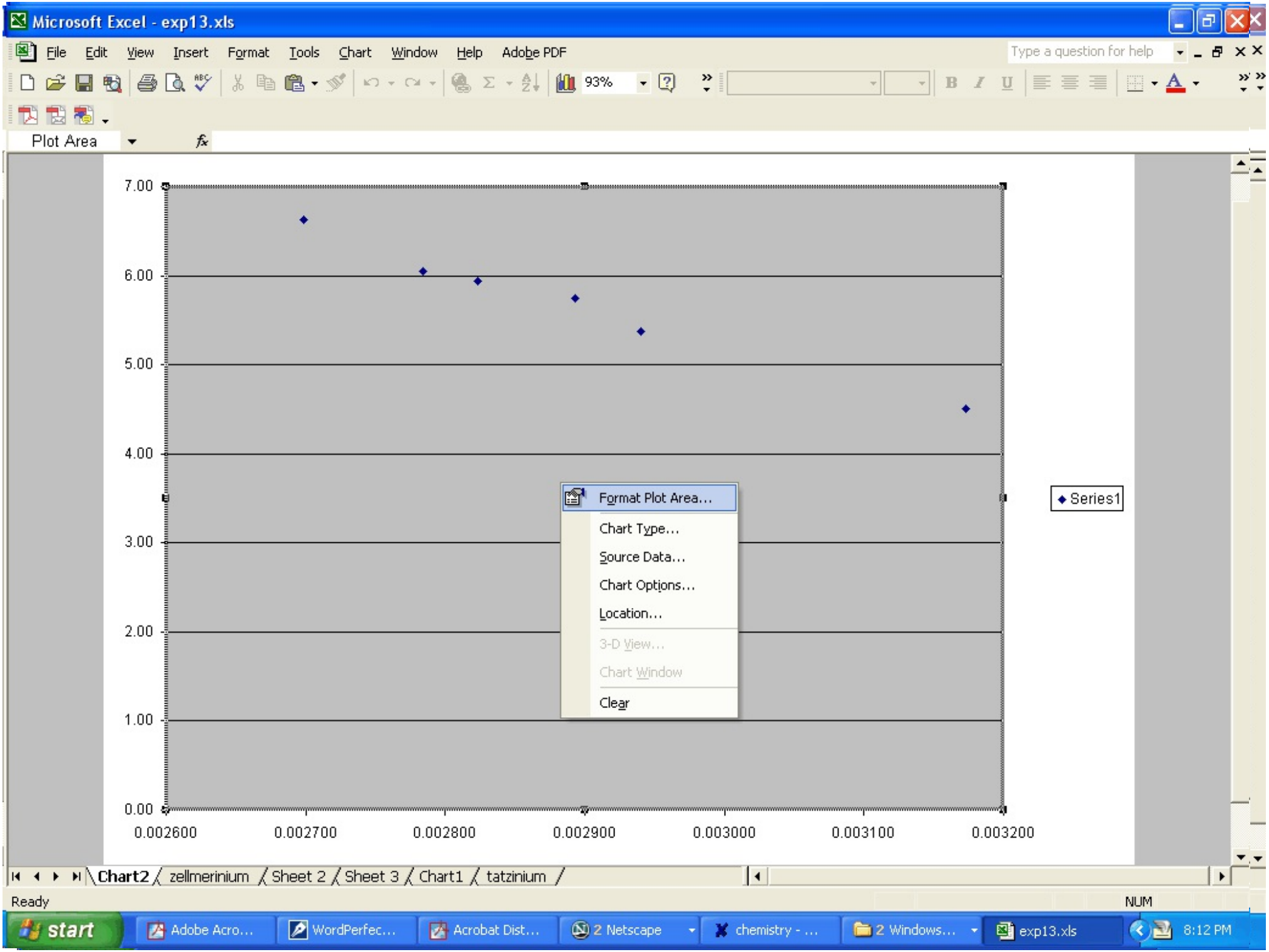
Series in: Rows / Columns

Cancel < Back Next > Finish

zellmerinium / Sheet 2 / Sheet 3 / Chart1 / tatzinium

Point Sum=34.27 NUM

start | Adobe Acro... | WordPerfec... | Acrobat Dist... | 2 Netscape | chemistry - ... | 2 Windows... | exp13.xls | 8:08 PM


Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
93%
Plot Area
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2.00
1.00
0.00
0.002600
0.002700
0.002800
0.002900
0.003000
0.003100
0.003200
Series1
Format Plot Area...
Chart Type...
Source Data...
Chart Options...
Location...
3-D View...
Chart Window
Clear
Chart2 zellmerinium Sheet 2 Sheet 3 Chart1 tatzinium
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start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
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2 Windows...
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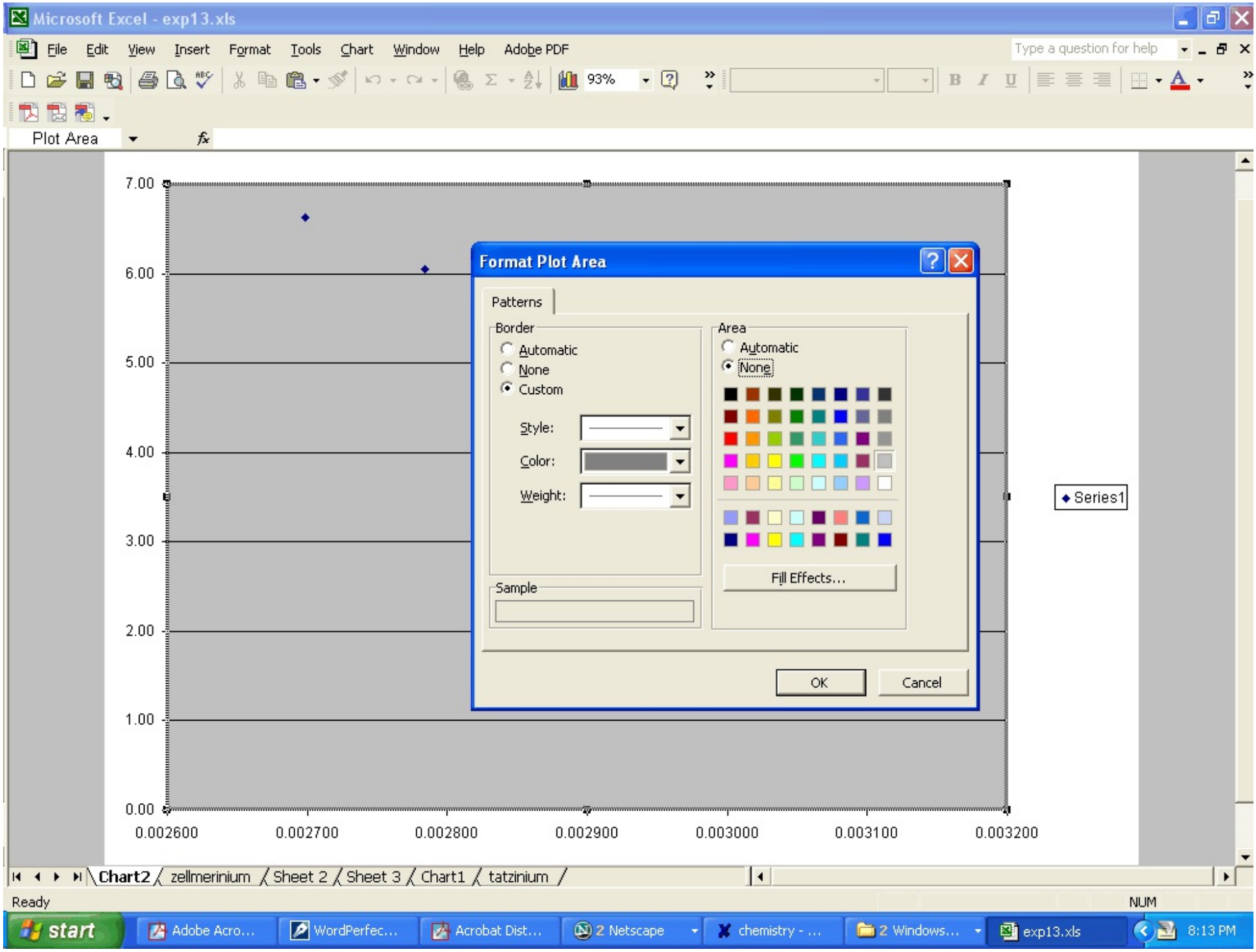
8:12 PM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93%
Plot Area
7.00
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3.00
2.00
1.00
0.00
0.002600
0.002700
0.002800
0.002900
0.003000
0.003100
0.003200
Series1
Format Plot Area
Patterns
Border
Automatic
None
Custom
Style:
Color:
Weight:
Sample
Area
Automatic
None
Fill Effects...
OK
Cancel
Chart2
zellmerinium
Sheet 2
Sheet 3
Chart1
tatzinium
Ready
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
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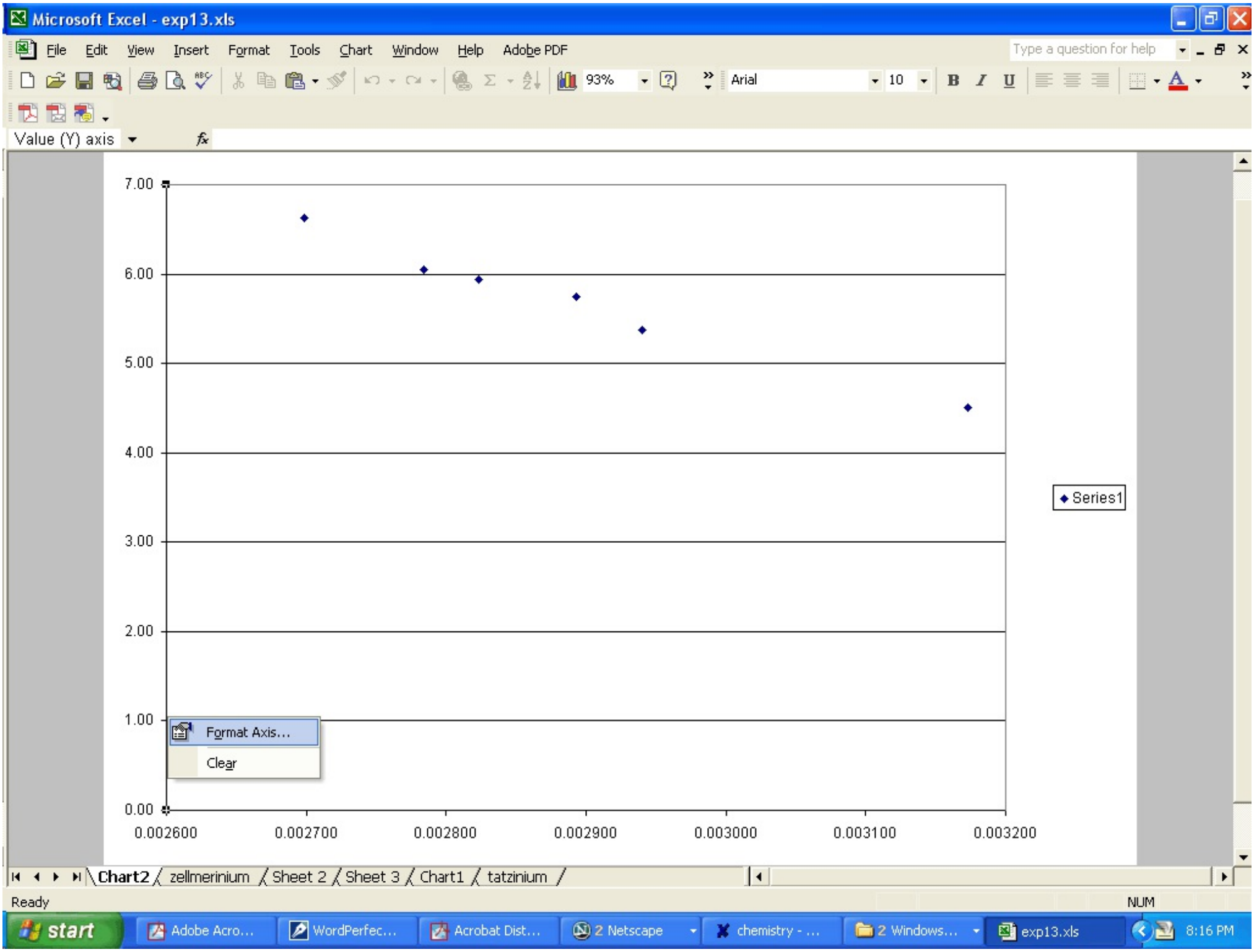
8:13 PM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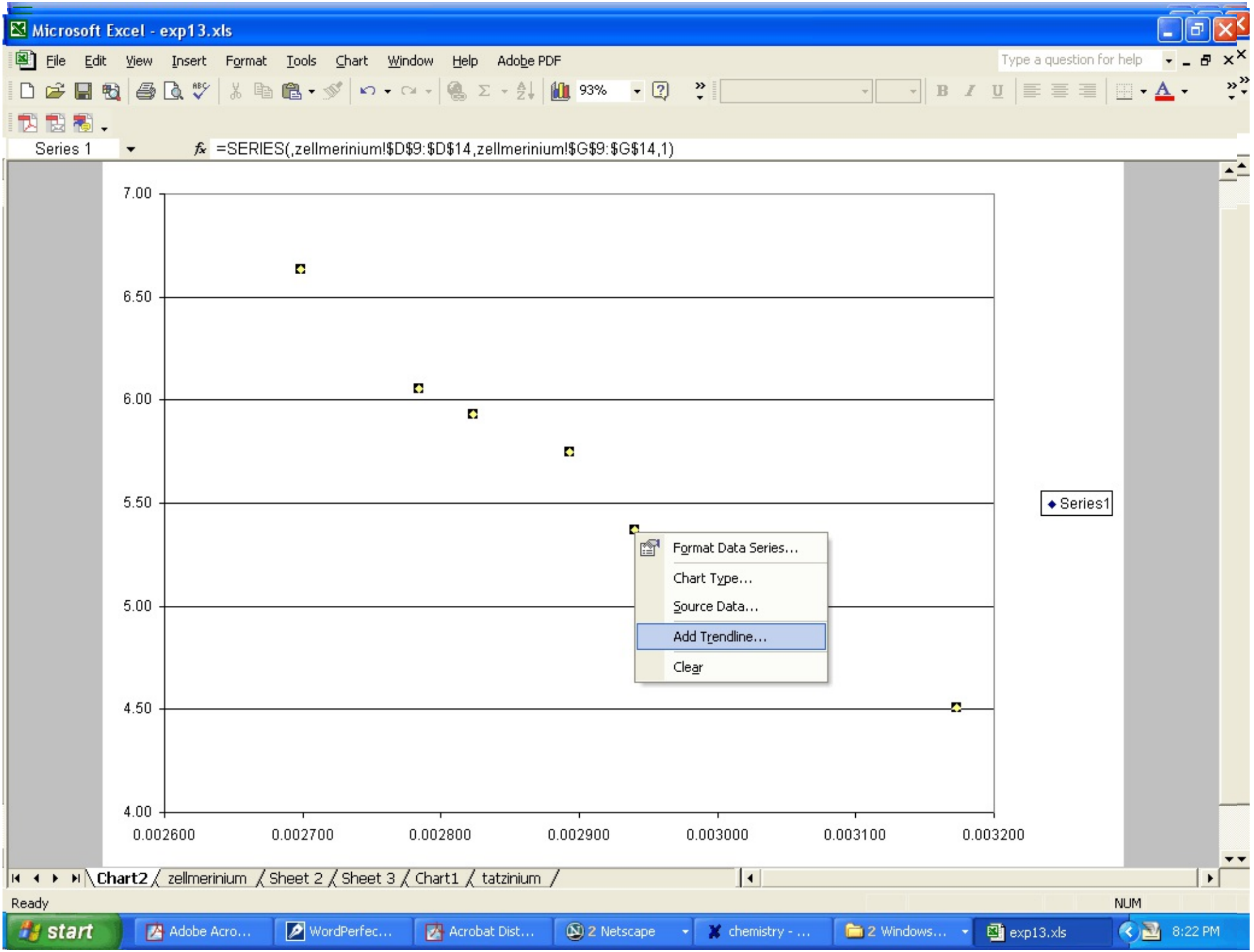
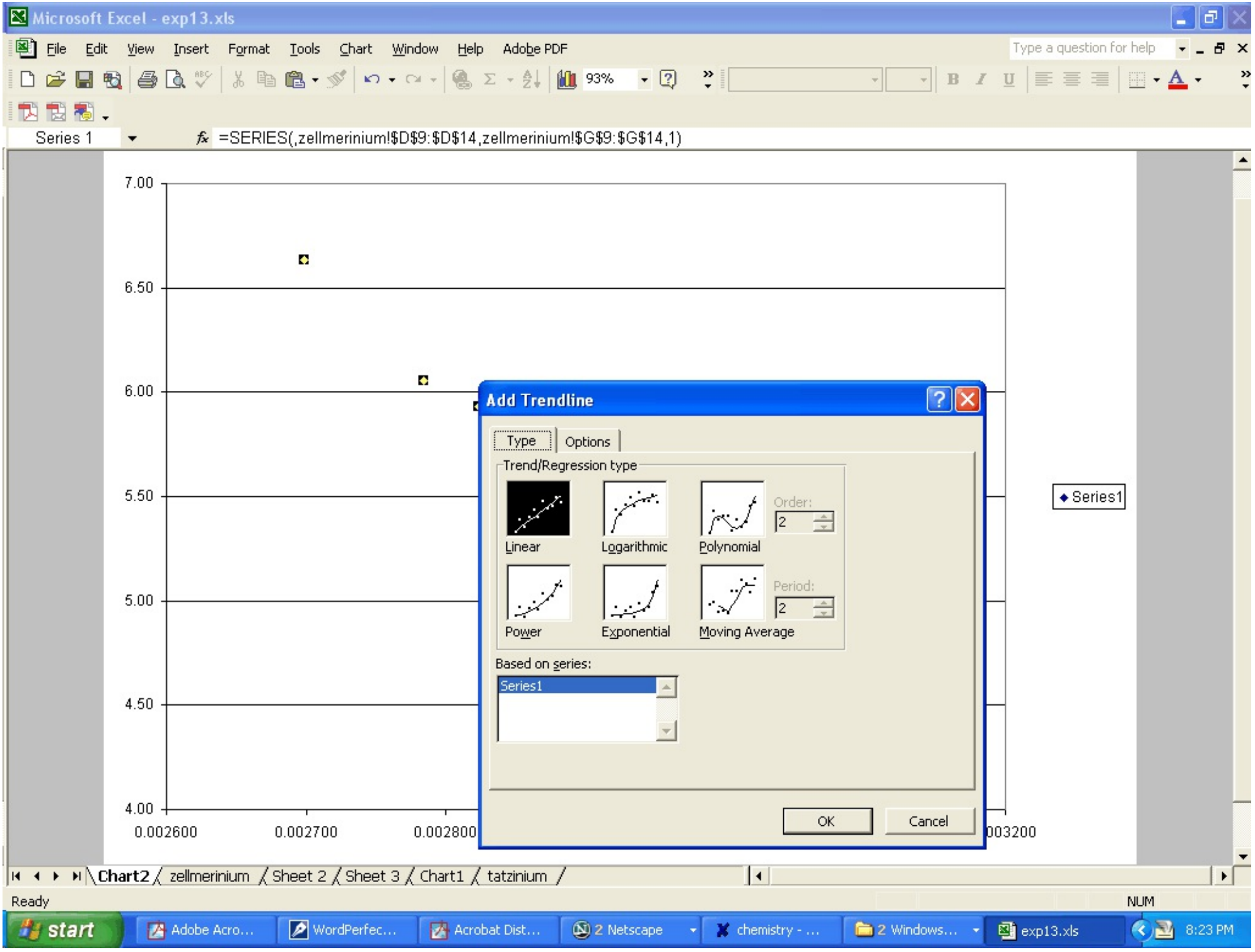
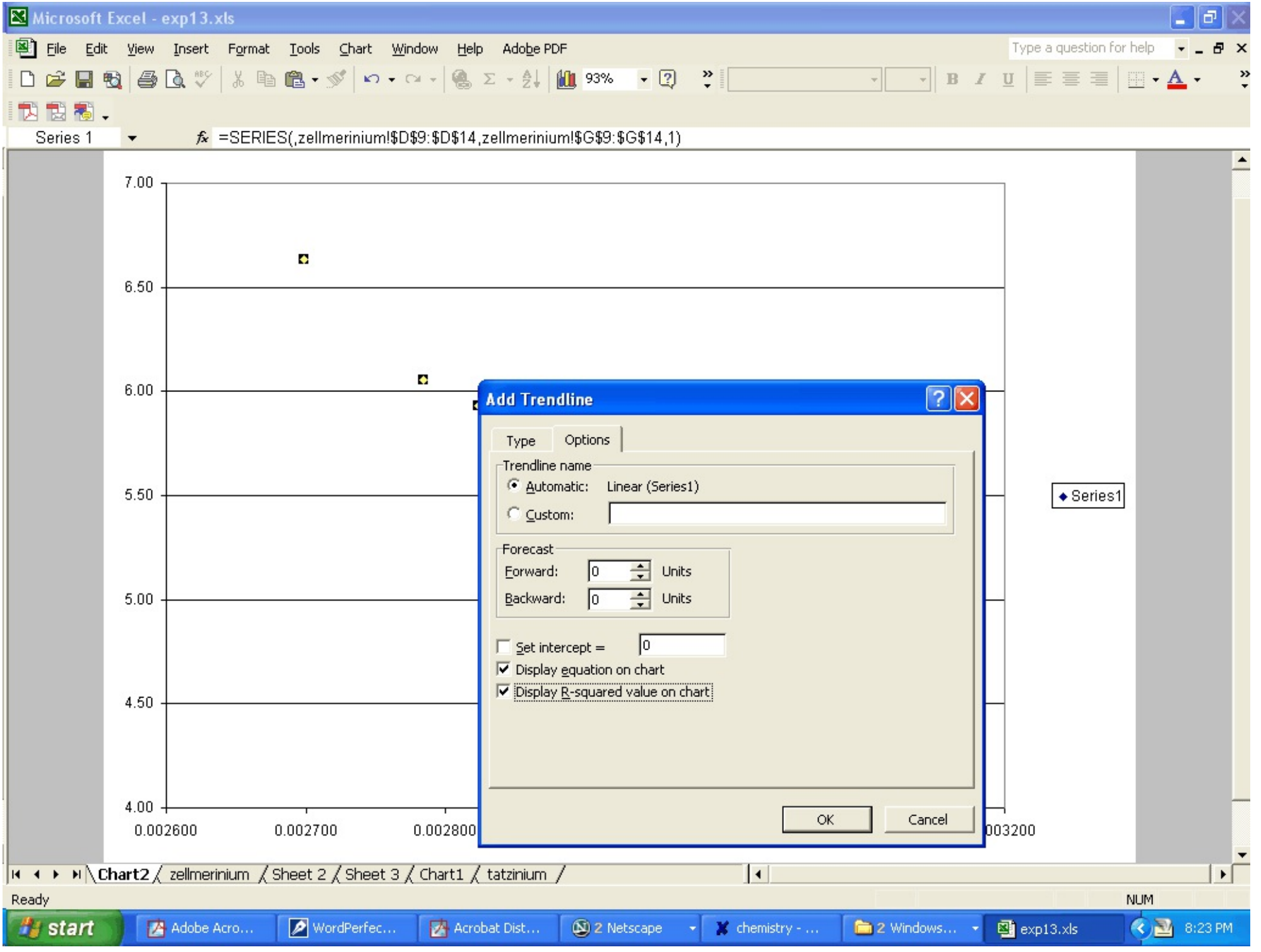
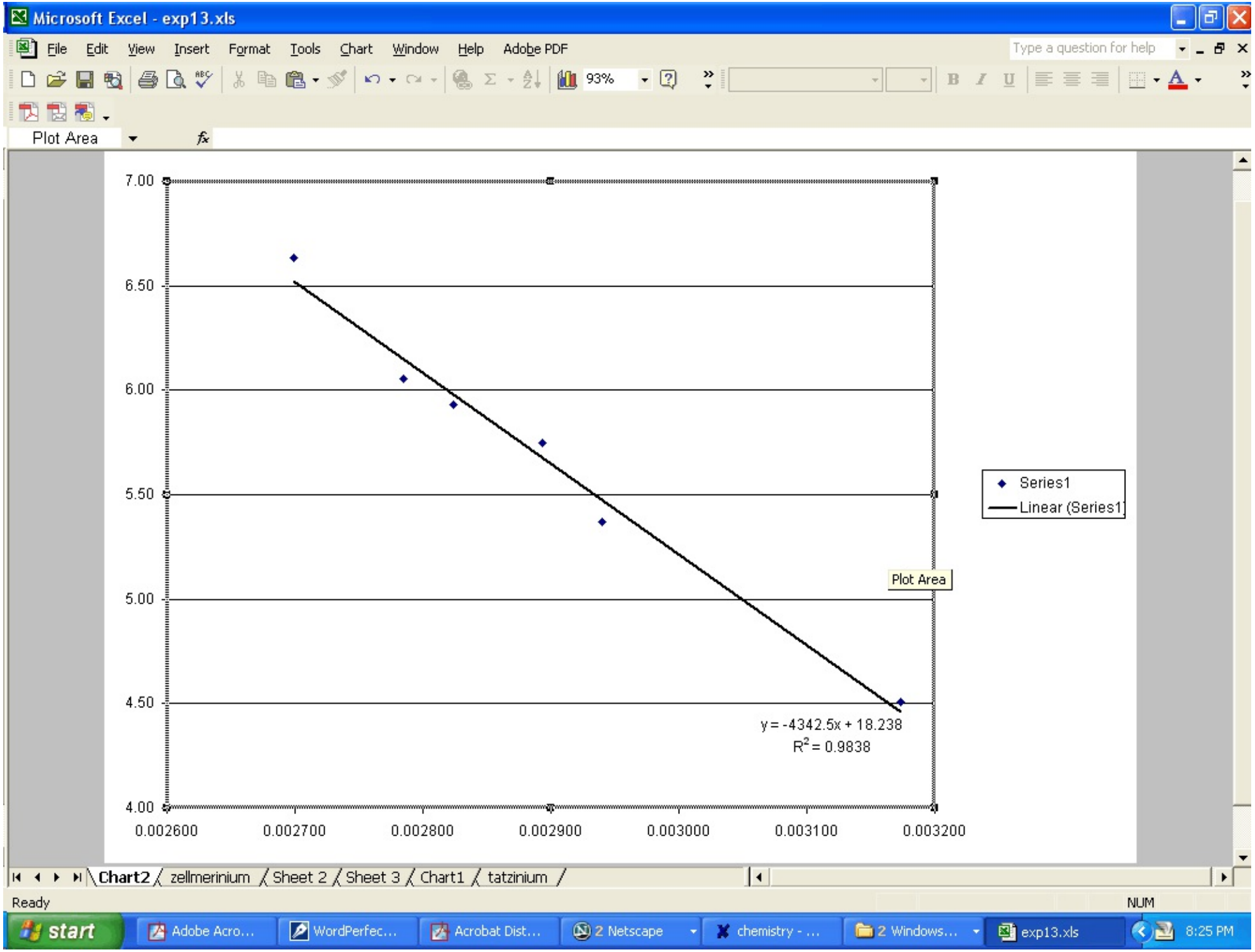
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
93%
Arial
10
Value (Y) axis
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.002600
0.002700
0.002800
0.002900
0.003000
0.003100
0.003200
Series1
Format Axis...
Clear
Chart2 zellmerinium Sheet 2 Sheet 3 Chart1 tatzinium
Ready
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:16 PM


Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
93%
Series 1
=SERIES(,zellmerinium!$D$9:$D$14,zellmerinium!$G$9:$G$14,1)
7.00
6.50
6.00
5.50
5.00
4.50
4.00
0.002600
0.002700
0.002800
0.002900
0.003000
0.003100
0.003200
Series1
Format Data Series...
Chart Type...
Source Data...
Add Trendline...
Clear
Chart2 zellmerinium Sheet 2 Sheet 3 Chart1 tatzinium
Ready
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:22 PM


Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
93%
Series 1
=SERIES(,zellmerinium!$D$9:$D$14,zellmerinium!$G$9:$G$14,1)
7.00
6.50
6.00
5.50
5.00
4.50
4.00
0.002600
0.002700
0.002800
003200
Series1
Add Trendline
Type
Options
Trend/Regression type
Linear
Logarithmic
Polynomial
Order:
2
Power
Exponential
Moving Average
Period:
2
Based on series:
Series1
OK
Cancel
Chart2
zellmerinium
Sheet 2
Sheet 3
Chart1
tatzinium
Ready
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:23 PM


Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
93%
Series 1
=SERIES(,zellmerinium!$D$9:$D$14,zellmerinium!$G$9:$G$14,1)
7.00
6.50
6.00
5.50
5.00
4.50
4.00
0.002600
0.002700
0.002800
003200
Series1
Add Trendline
Type
Options
Trendline name
Automatic: Linear (Series1)
Custom:
Forecast
Forward: 0 Units
Backward: 0 Units
Set intercept = 0
Display equation on chart
Display R-squared value on chart
OK
Cancel
Chart2
zellmerinium
Sheet 2
Sheet 3
Chart1
tatzinium
Ready
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:23 PM


Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
93%
Plot Area
7.00
6.50
6.00
5.50
5.00
4.50
4.00
0.002600
0.002700
0.002800
0.002900
0.003000
0.003100
0.003200
Series1
Linear (Series1)
Plot Area
y = -4342.5x + 18.238
R2 = 0.9838
Chart2 zellmerinium Sheet 2 Sheet 3 Chart1 tatzinium
Ready
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:25 PM

How do you add other data? The next few slides show this.

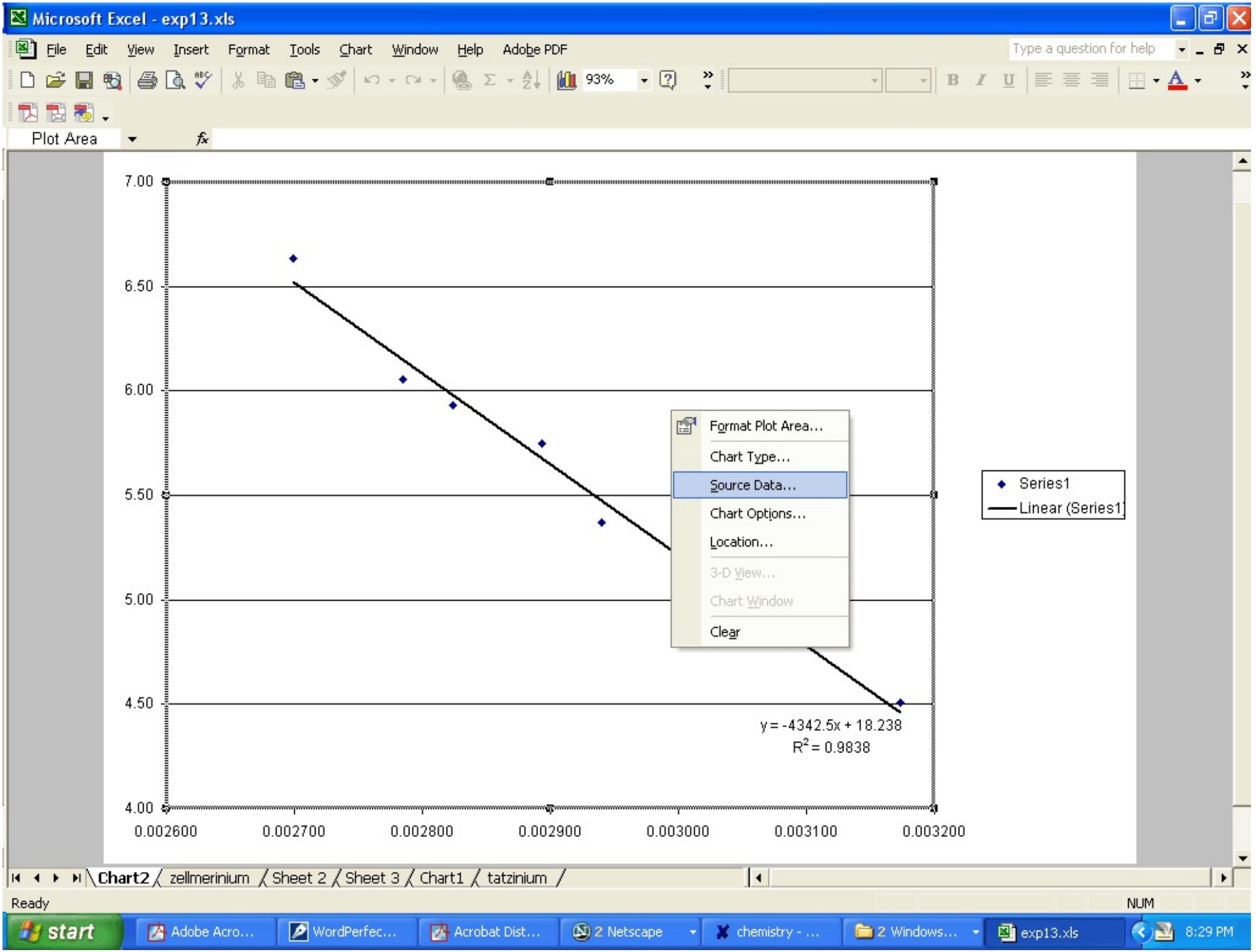
Right click in the plot area. Then click on "Source Data" or "Select Data". Click on the "Series" tab. Click on "Add" button. You can change the title of your series by typing a name in the "Name" box. Then click on the little "spreadsheet" icon for "X Values". Then go to the "sheet" which contains the data you want to plot and highlight the x values (1/T) and hit 'enter'. Do the same for the "Y Values".

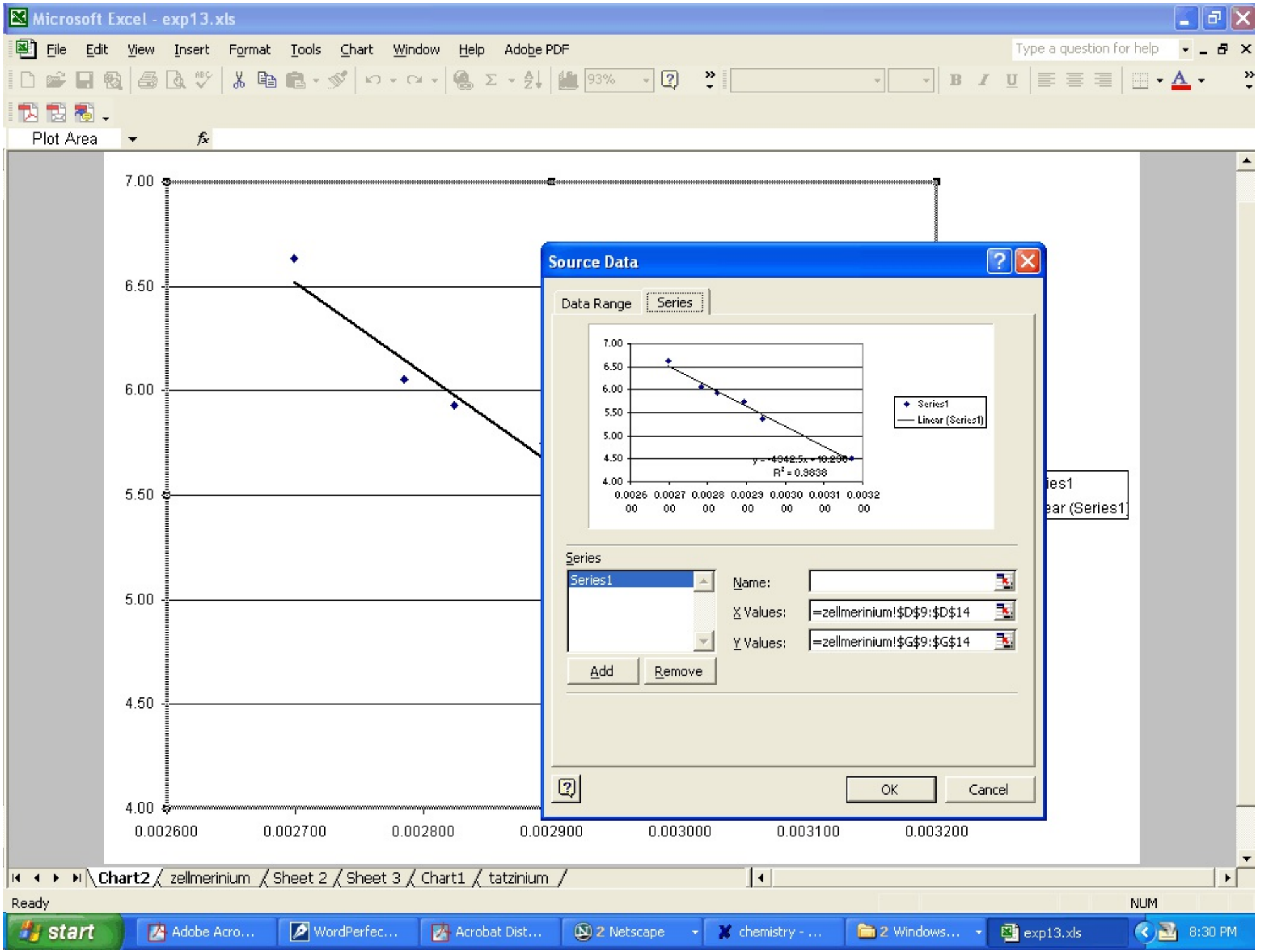
You can get rid of the part of the legend that shows the line by highlighting it in the legend and pushing the 'delete' key. It's not needed if the points used for each set of data use different symbols (which is the default).

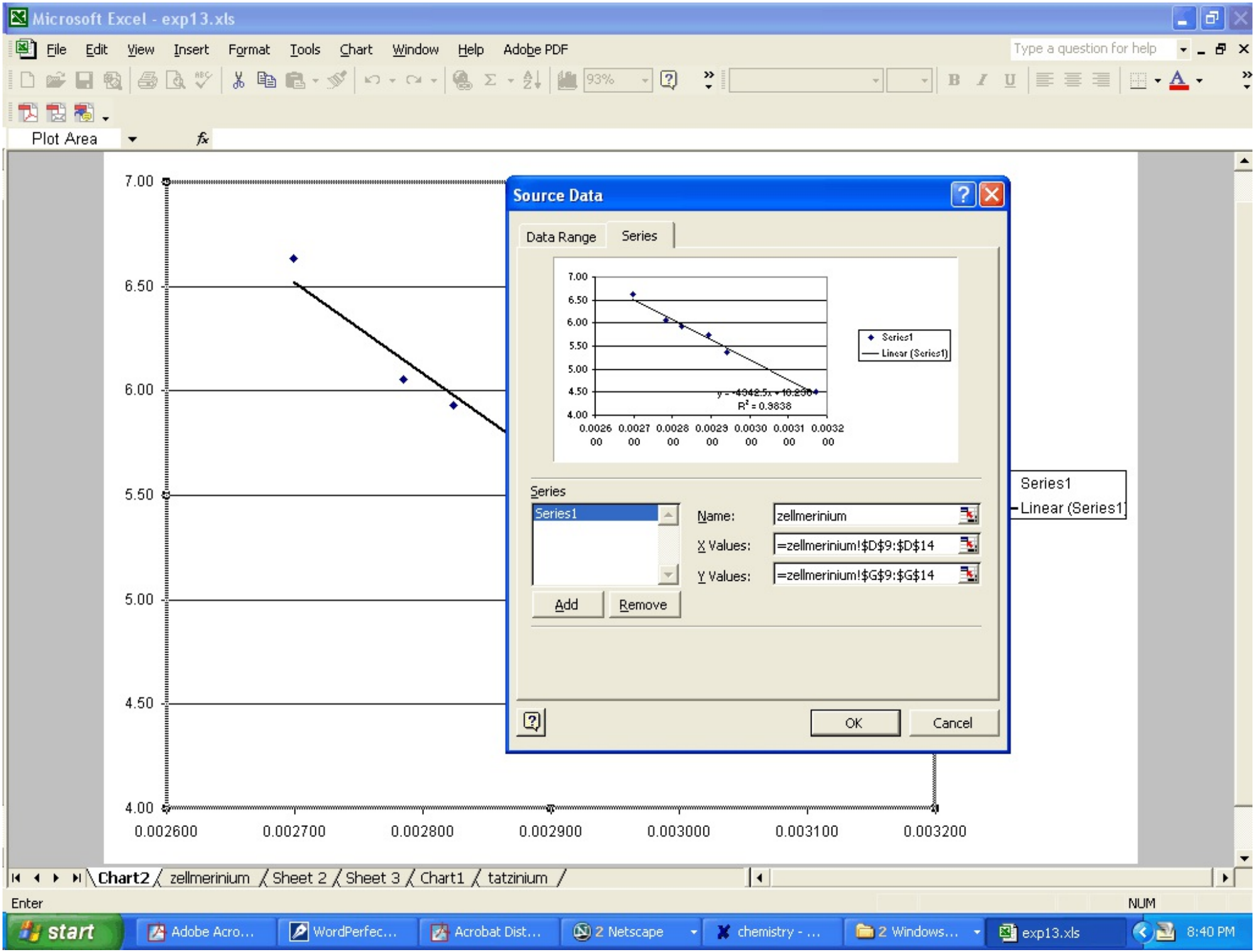
Then do the trend line for the new data.

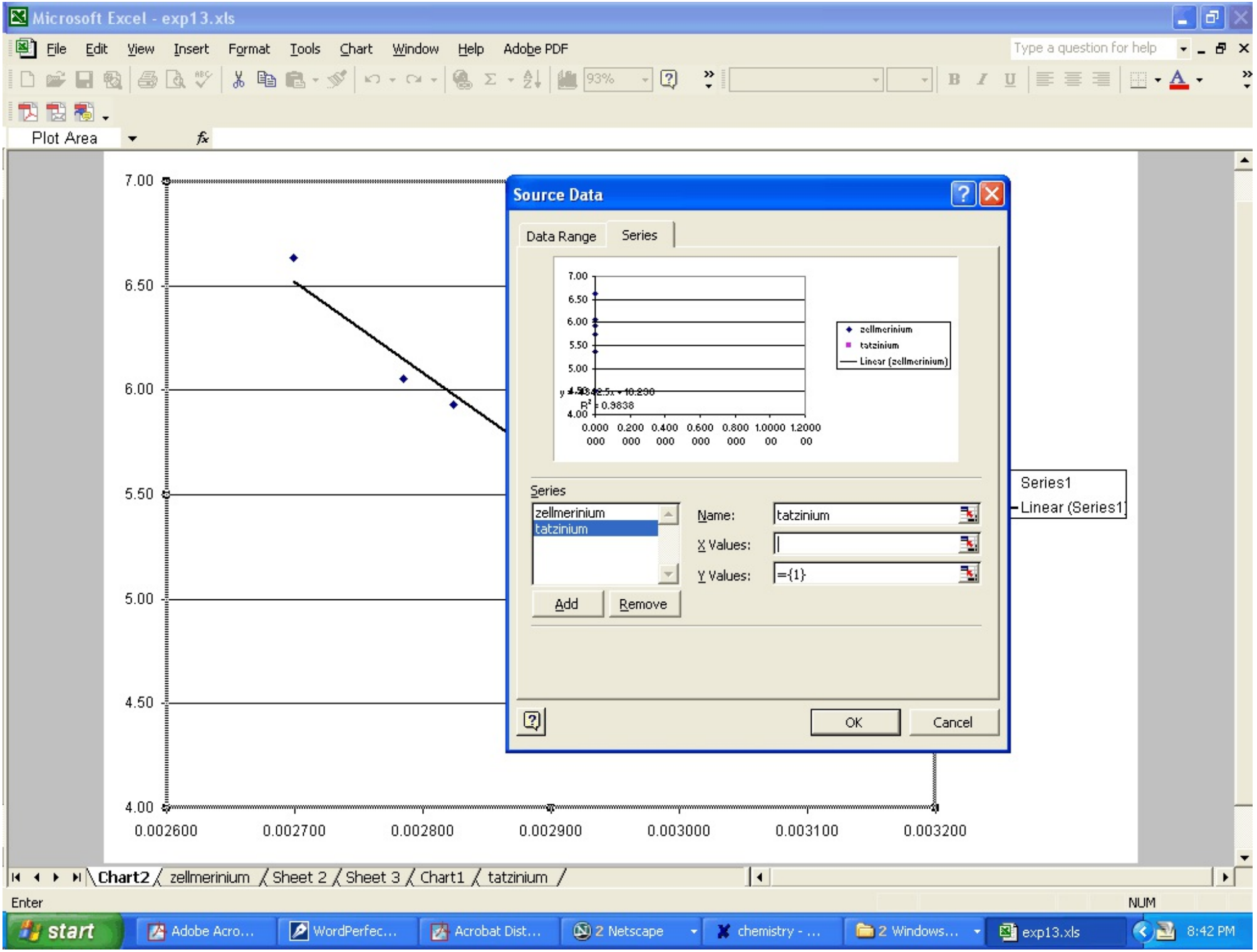
Repeat for the 3rd set of data.

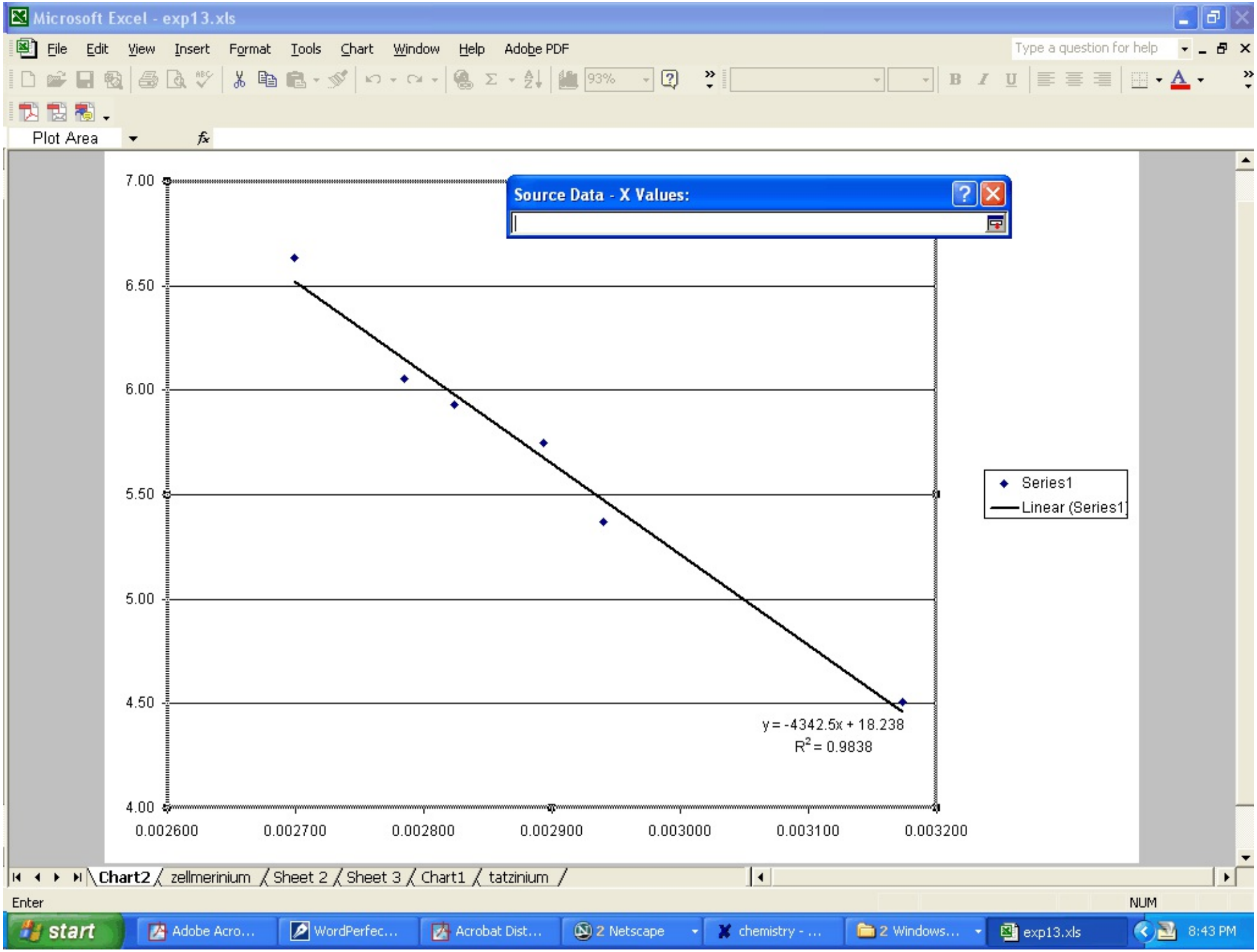
Do not attempt to change the 1/T axis (x-axis) to 1/T * 1000 (as was on the overhead in class). This will cause a problem with the slope reported by Excel. Just leave the numbers on the x-axis as I've shown them.

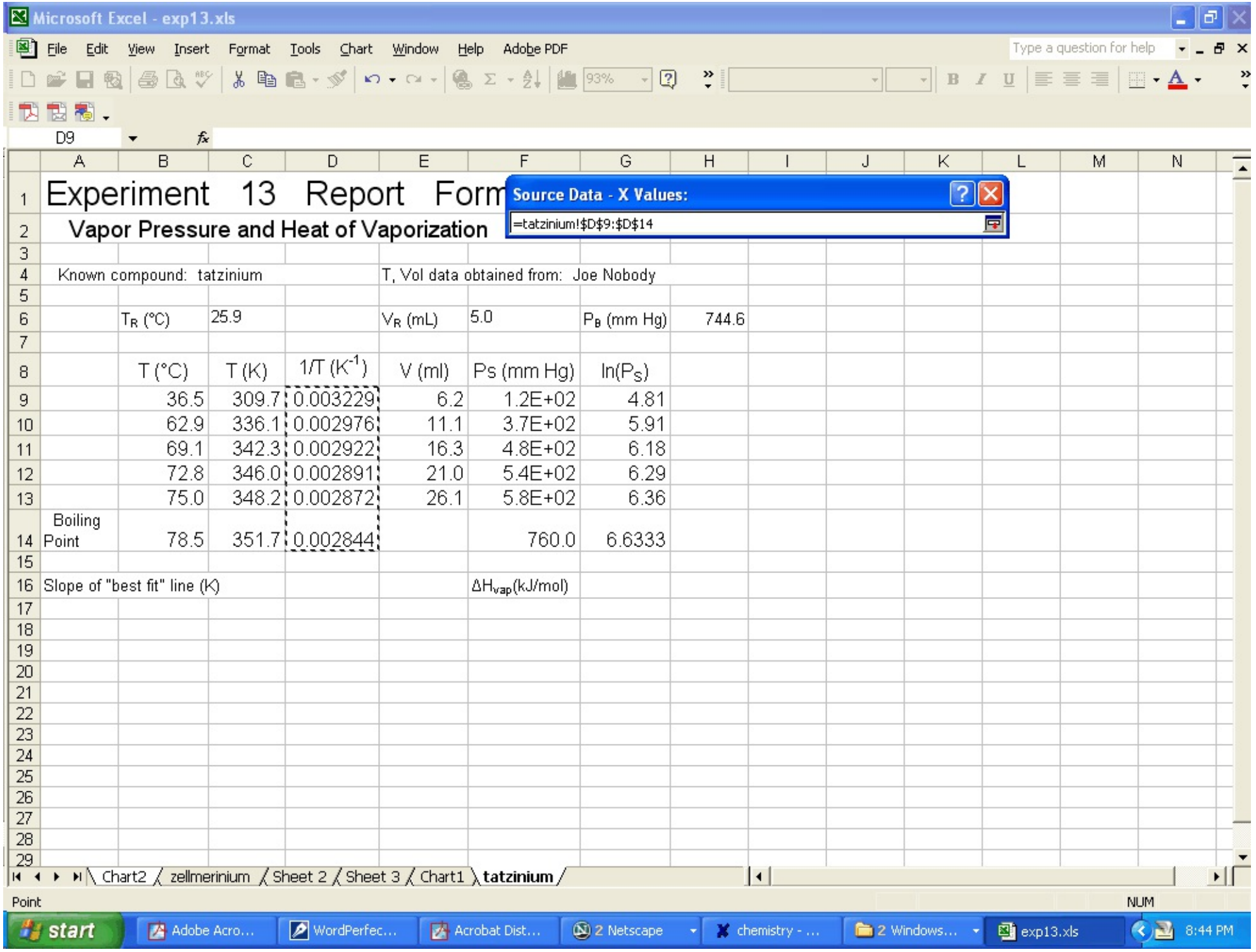

Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
93%
Plot Area
7.00
6.50
6.00
5.50
5.00
4.50
4.00
0.002600
0.002700
0.002800
0.002900
0.003000
0.003100
0.003200
Format Plot Area...
Chart Type...
Source Data...
Chart Options...
Location...
3-D View...
Chart Window
Clear
Series1
Linear (Series1)
y = -4342.5x + 18.238
R2 = 0.9838
Chart2 zellmerinium Sheet 2 Sheet 3 Chart1 tatzinium
Ready
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:29 PM

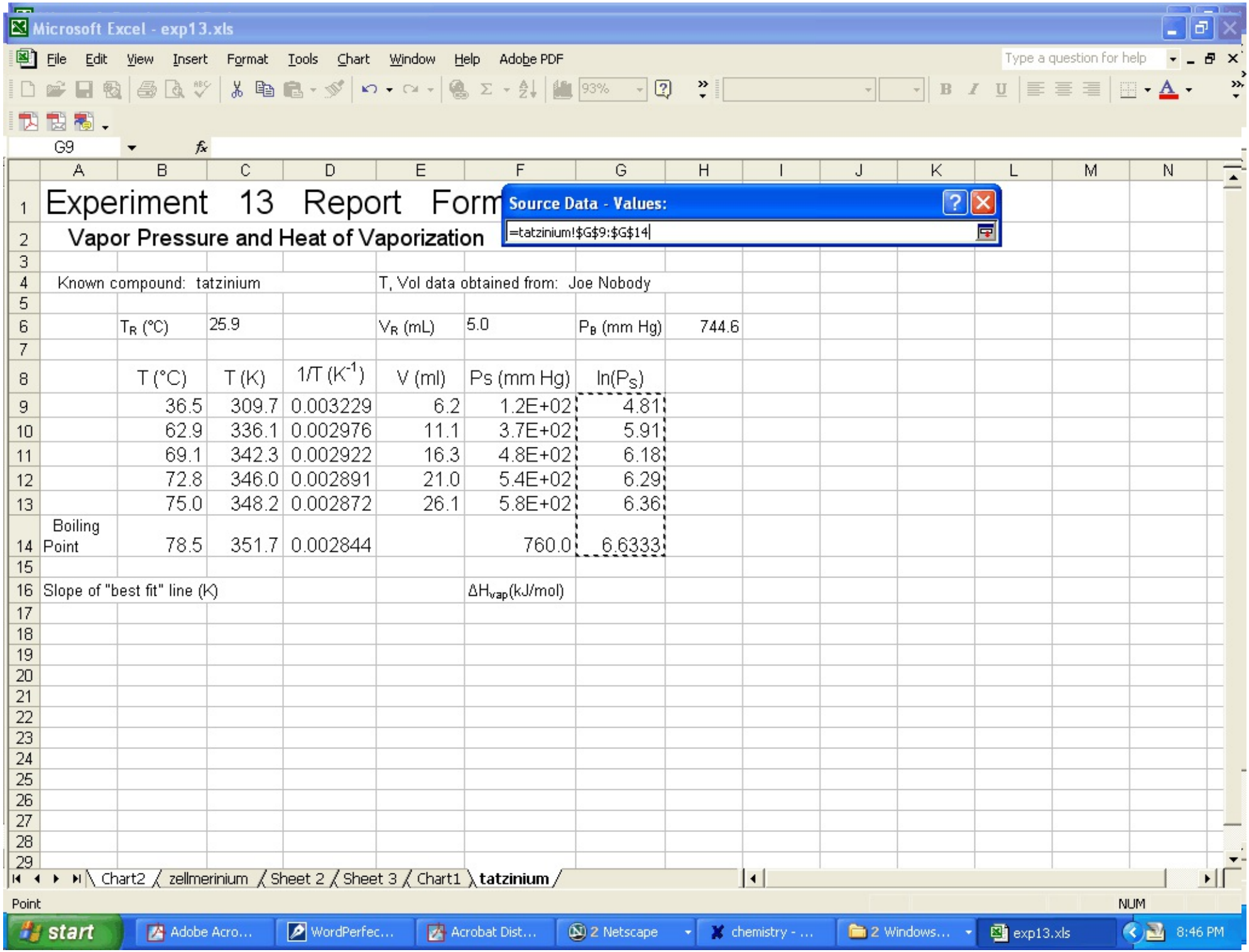

Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
Plot Area
7.00
6.50
6.00
5.50
5.00
4.50
4.00
0.002600
0.002700
0.002800
0.002900
0.003000
0.003100
0.003200
Source Data
Data Range
Series
Series1
Linear (Series1)
y = -4942.5x + 16.236
R² = 0.9838
Series
Series1
Name:
X Values:
=zellmerinium!$D$9:$D$14
Y Values:
=zellmerinium!$G$9:$G$14
Add
Remove
OK
Cancel
Chart2
zellmerinium
Sheet 2
Sheet 3
Chart1
tatzinium
Ready
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:30 PM


Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
Plot Area
7.00
6.50
6.00
5.50
5.00
4.50
4.00
0.002600
0.002700
0.002800
0.002900
0.003000
0.003100
0.003200
Source Data
Data Range
Series
Series1
Linear (Series1)
y = -4942.5x + 18.256
R² = 0.9838
Series
Series1
Name:
zellmerinium
X Values:
=zellmerinium!$D$9:$D$14
Y Values:
=zellmerinium!$G$9:$G$14
Add
Remove
OK
Cancel
Chart2
zellmerinium
Sheet 2
Sheet 3
Chart1
tatzinium
Enter
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:40 PM


Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
Plot Area
7.00
6.50
6.00
5.50
5.00
4.50
4.00
0.002600
0.002700
0.002800
0.002900
0.003000
0.003100
0.003200
Source Data
Data Range
Series
zellmerinium
tatzinium
Linear (zellmerinium)
Series
zellmerinium
tatzinium
Name:
tatzinium
X Values:
Y Values:
={1}
Add
Remove
OK
Cancel
Series1
Linear (Series1)
Chart2
zellmerinium
Sheet 2
Sheet 3
Chart1
tatzinium
Enter
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:42 PM


Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
Plot Area
Source Data - X Values:
7.00
6.50
6.00
5.50
5.00
4.50
4.00
0.002600
0.002700
0.002800
0.002900
0.003000
0.003100
0.003200
Series1
Linear (Series1)
y = -4342.5x + 18.238
R2 = 0.9838
Chart2 zellmerinium Sheet 2 Sheet 3 Chart1 tatzinium
Enter
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:43 PM


Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
D9
Source Data - X Values:
=tatzinium!$D$9:$D$14
Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound: tatzinium
T, Vol data obtained from: Joe Nobody
TR (°C) 25.9
VR (mL) 5.0
PB (mm Hg) 744.6
T (°C) T (K) 1/T (K-1) V (ml) Ps (mm Hg) ln(PS)
36.5 309.7 0.003229 6.2 1.2E+02 4.81
62.9 336.1 0.002976 11.1 3.7E+02 5.91
69.1 342.3 0.002922 16.3 4.8E+02 6.18
72.8 346.0 0.002891 21.0 5.4E+02 6.29
75.0 348.2 0.002872 26.1 5.8E+02 6.36
Boiling Point 78.5 351.7 0.002844 760.0 6.6333
Slope of "best fit" line (K)
ΔHvap(kJ/mol)
Chart2 zellmerinium Sheet 2 Sheet 3 Chart1 tatzinium
Point
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:44 PM


Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
G9
Source Data - Values:
=tatzinium!$G$9:$G$14
Experiment 13 Report Form
Vapor Pressure and Heat of Vaporization
Known compound: tatzinium
T, Vol data obtained from: Joe Nobody
TR (°C) 25.9
VR (mL) 5.0
PB (mm Hg) 744.6
T (°C) T (K) 1/T (K-1) V (ml) Ps (mm Hg) ln(PS)
36.5 309.7 0.003229 6.2 1.2E+02 4.81
62.9 336.1 0.002976 11.1 3.7E+02 5.91
69.1 342.3 0.002922 16.3 4.8E+02 6.18
72.8 346.0 0.002891 21.0 5.4E+02 6.29
75.0 348.2 0.002872 26.1 5.8E+02 6.36
Boiling Point 78.5 351.7 0.002844 760.0 6.6333
Slope of "best fit" line (K)
ΔHvap(kJ/mol)
Chart2 zellmerinium Sheet 2 Sheet 3 Chart1 tatzinium
Point
NUM
start
Adobe Acro... WordPerfec... Acrobat Dist... 2 Netscape chemistry - ... 2 Windows... exp13.xls 8:46 PM

Microsoft Excel - exp13.xls

File Edit View Insert Format Tools Chart Window Help Adobe PDF

Type a question for help

G9

# Experiment 13 Report Form

## Vapor Pressure and Heat of Vaporization

Known compound: tatzinium

T, Vol data obtain

$T_R$ (°C) 25.9

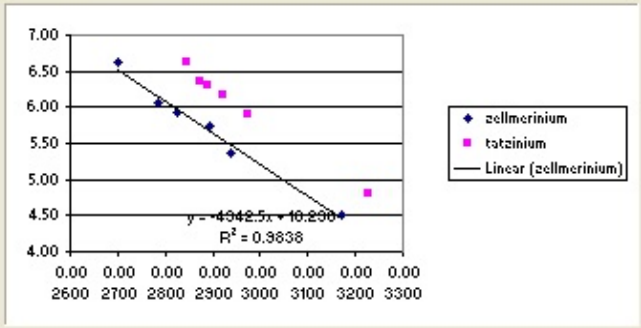
$V_R$ (mL) 5.0

| | T (°C) | T (K) | 1/T ($K^{-1}$) | V (ml) | Ps |
|---|---|---|---|---|---|
| | 36.5 | 309.7 | 0.003229 | 6.2 | |
| | 62.9 | 336.1 | 0.002976 | 11.1 | |
| | 69.1 | 342.3 | 0.002922 | 16.3 | |
| | 72.8 | 346.0 | 0.002891 | 21.0 | |
| | 75.0 | 348.2 | 0.002872 | 26.1 | |
| Boiling Point | 78.5 | 351.7 | 0.002844 | | |

Slope of "best fit" line (K) $\Delta H_{va}$

Source Data

Data Range | Series




Series

zellmerinium
tatzinium

Add Remove

Name: tatzinium

X Values: =tatzinium!$D$9:$D$14

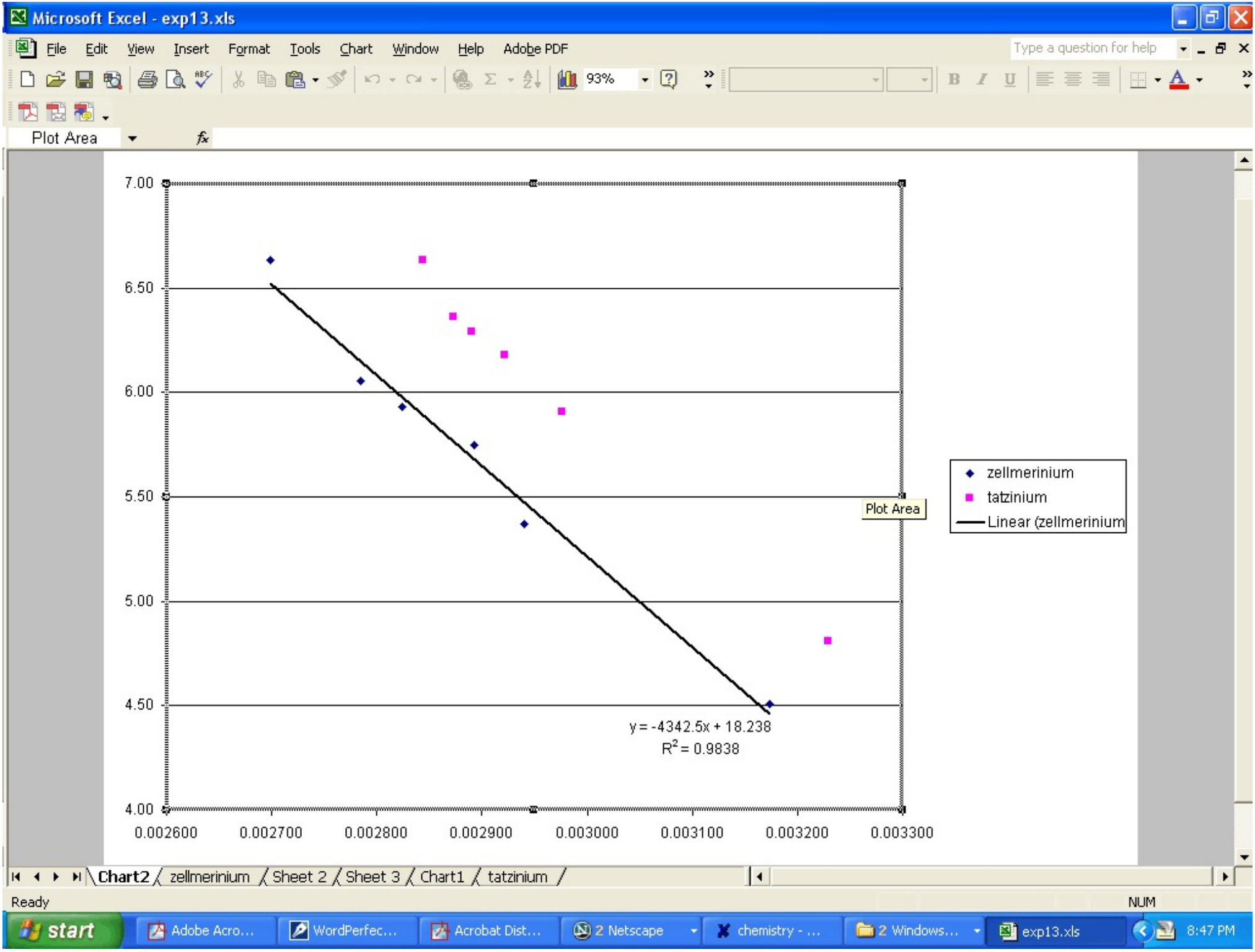
Y Values: =tatzinium!$G$9:$G$14

OK Cancel

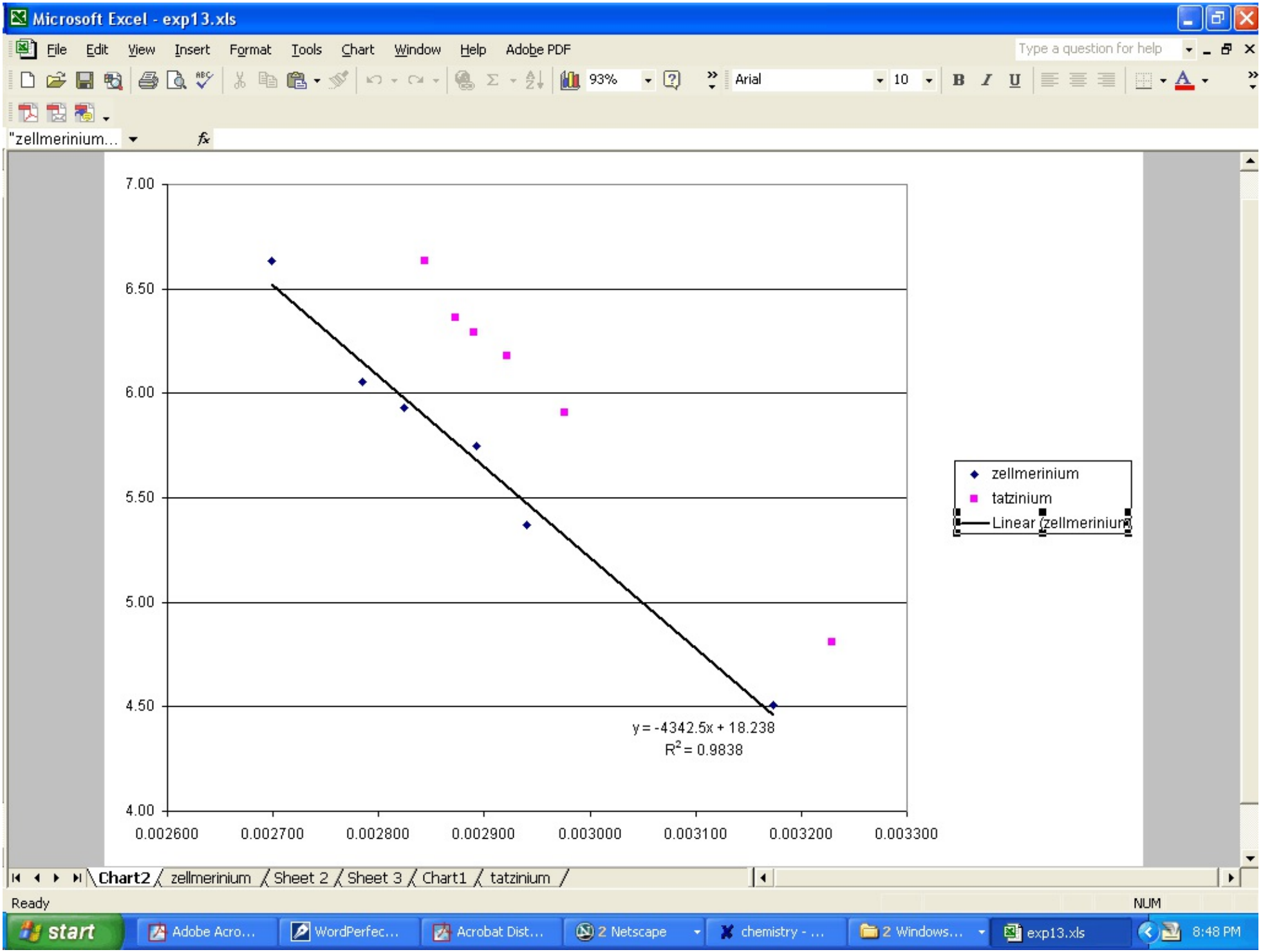
Chart2 | zellmerinium | Sheet 2 | Sheet 3 | Chart1 | tatzinium

Point NUM

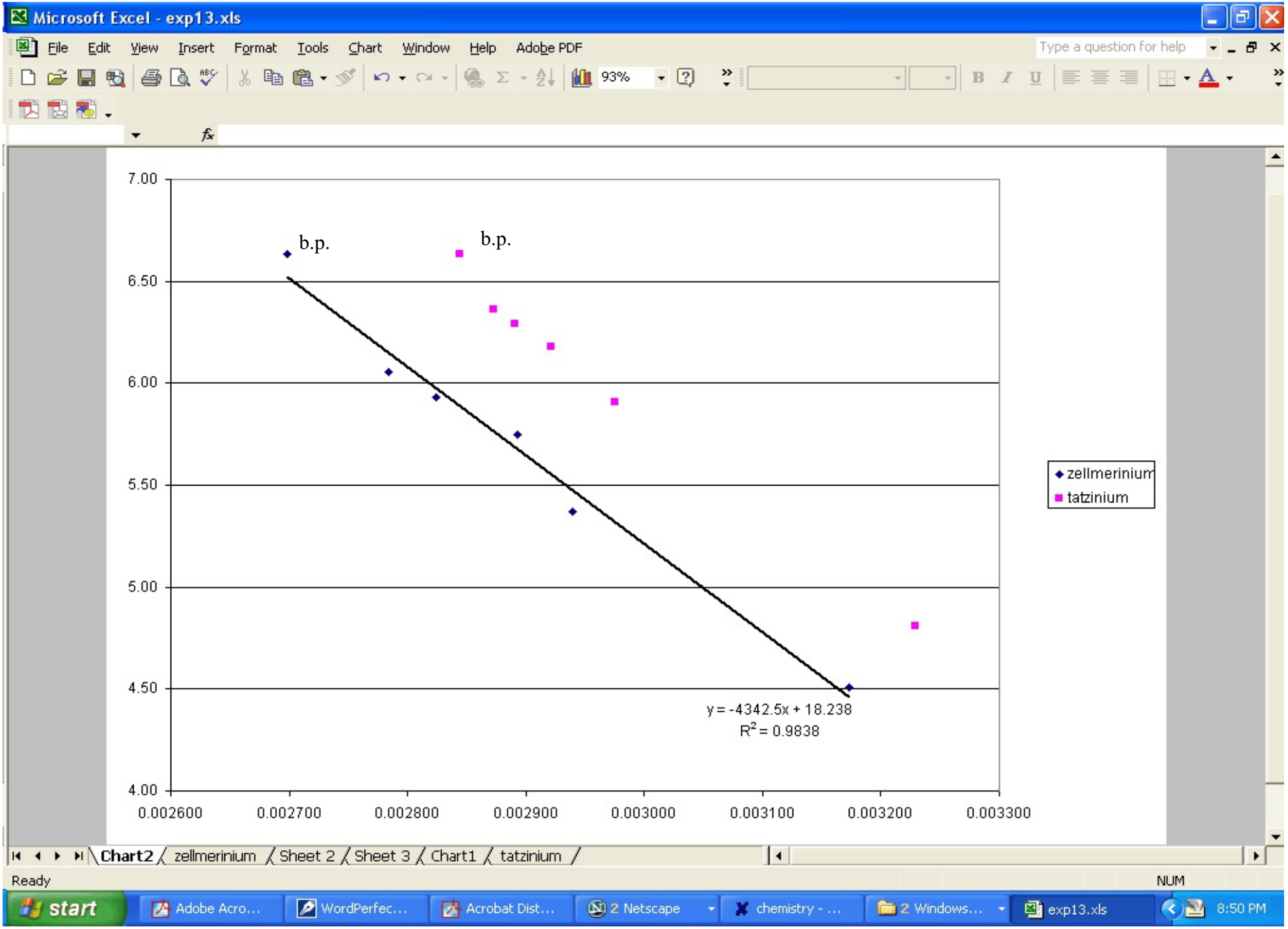
start | Adobe Acro... | WordPerfec... | Acrobat Dist... | 2 Netscape | chemistry - ... | 2 Windows... | exp13.xls | 8:46 PM


Microsoft Excel - exp13.xls
File Edit View Insert Format Tools Chart Window Help Adobe PDF
Type a question for help
93%
Plot Area
7.00
6.50
6.00
5.50
5.00
4.50
4.00
0.002600
0.002700
0.002800
0.002900
0.003000
0.003100
0.003200
0.003300
zellmerinium
tatzinium
Linear (zellmerinium
Plot Area
y = -4342.5x + 18.238
R2 = 0.9838
Chart2 zellmerinium Sheet 2 Sheet 3 Chart1 tatzinium
Ready
NUM
start
Adobe Acro...
WordPerfec...
Acrobat Dist...
2 Netscape
chemistry - ...
2 Windows...
exp13.xls
8:47 PM

Delete the part of the legend for the line. Click on the legend and then on the line description and press the delete key.



Add labels for the boiling points. You MUST include the normal and experimental b.p. and have these points labeled as such. You can use the "Insert" tab in Excel and insert a text box for these labels.



The following is a finished graph with all three compounds (using a different set of data then in the previous examples). This gives an idea of what it should look like. It would take up the whole page w/o this paragraph. Set page margins to zero inches (if Excel complains ignore it). See the "Laboratory" link for a better example of this graph.