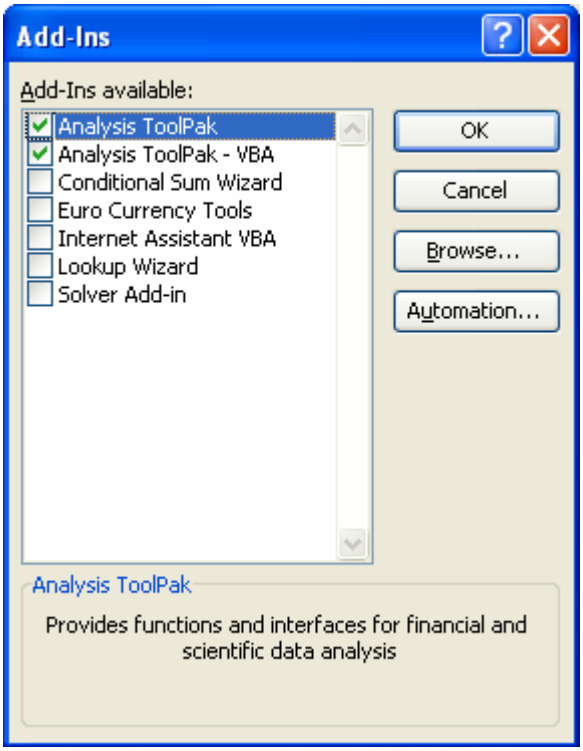
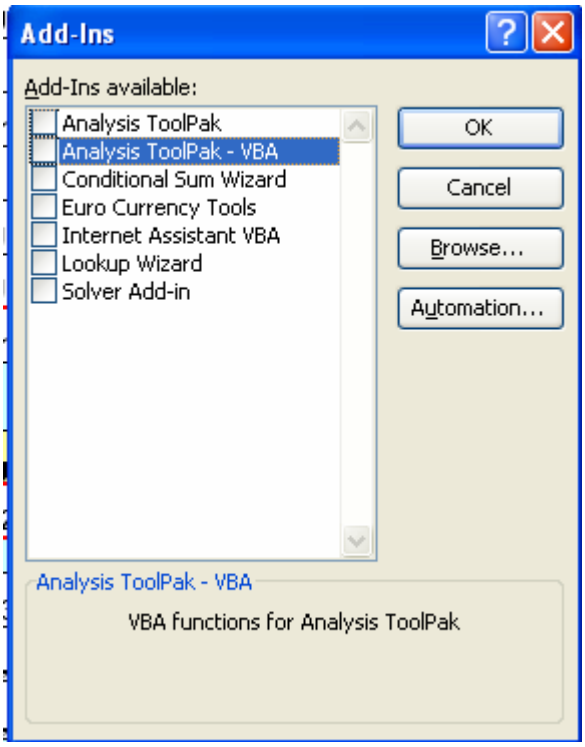
COMPLEX CHAIN CALCULATION MANUAL

1. Open ComlexChainCalc11Mar08.xls

2. Make sure that Analysis ToolPak has been loaded in your Ms. Excel
   - On the Tools menu, click Add-Ins.



If the check box next to Analysis Toolpak is selected, it means Analysis Toolpak has been installed in your Excel. Please proceed to step 3.

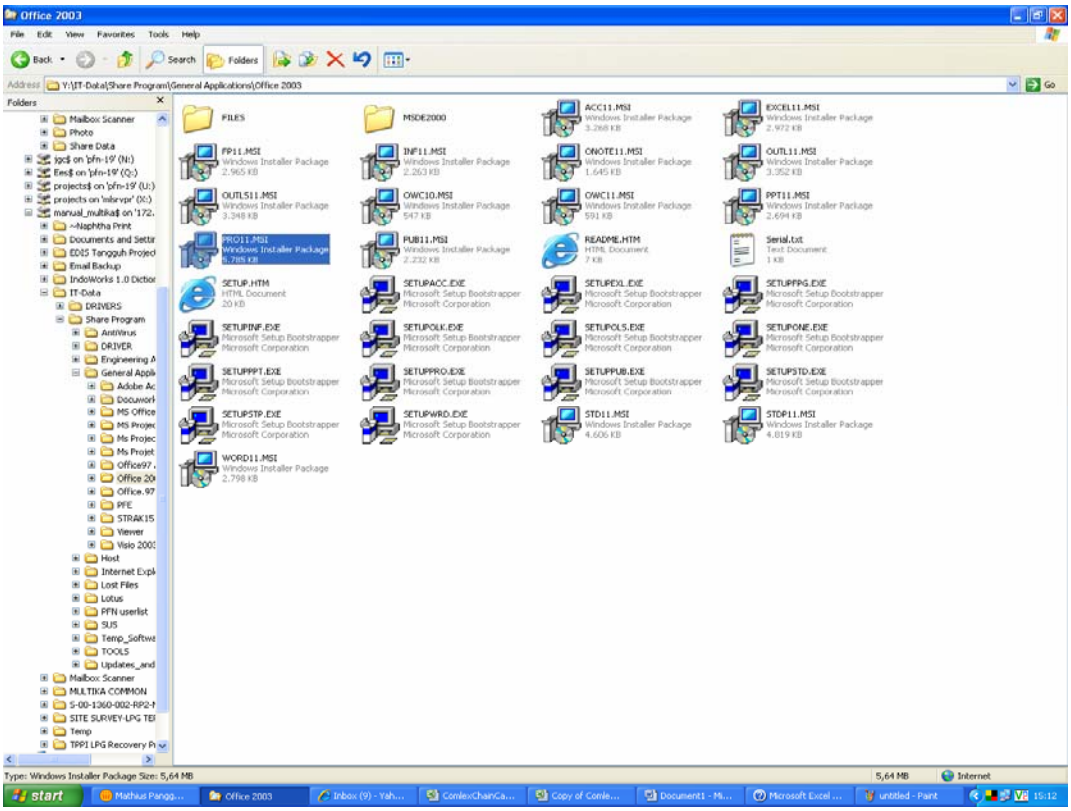


If the check box next to Analysis Toolpak is not selected, it means Analysis Toolpak has not been installed in your Excel. Please load the Analysis Toolpak.

1. In the Add-Ins available box, select the check box next to Analysis Toolpak, and then click OK. Tip If Analysis Toolpak is not listed, click Browse to locate it.

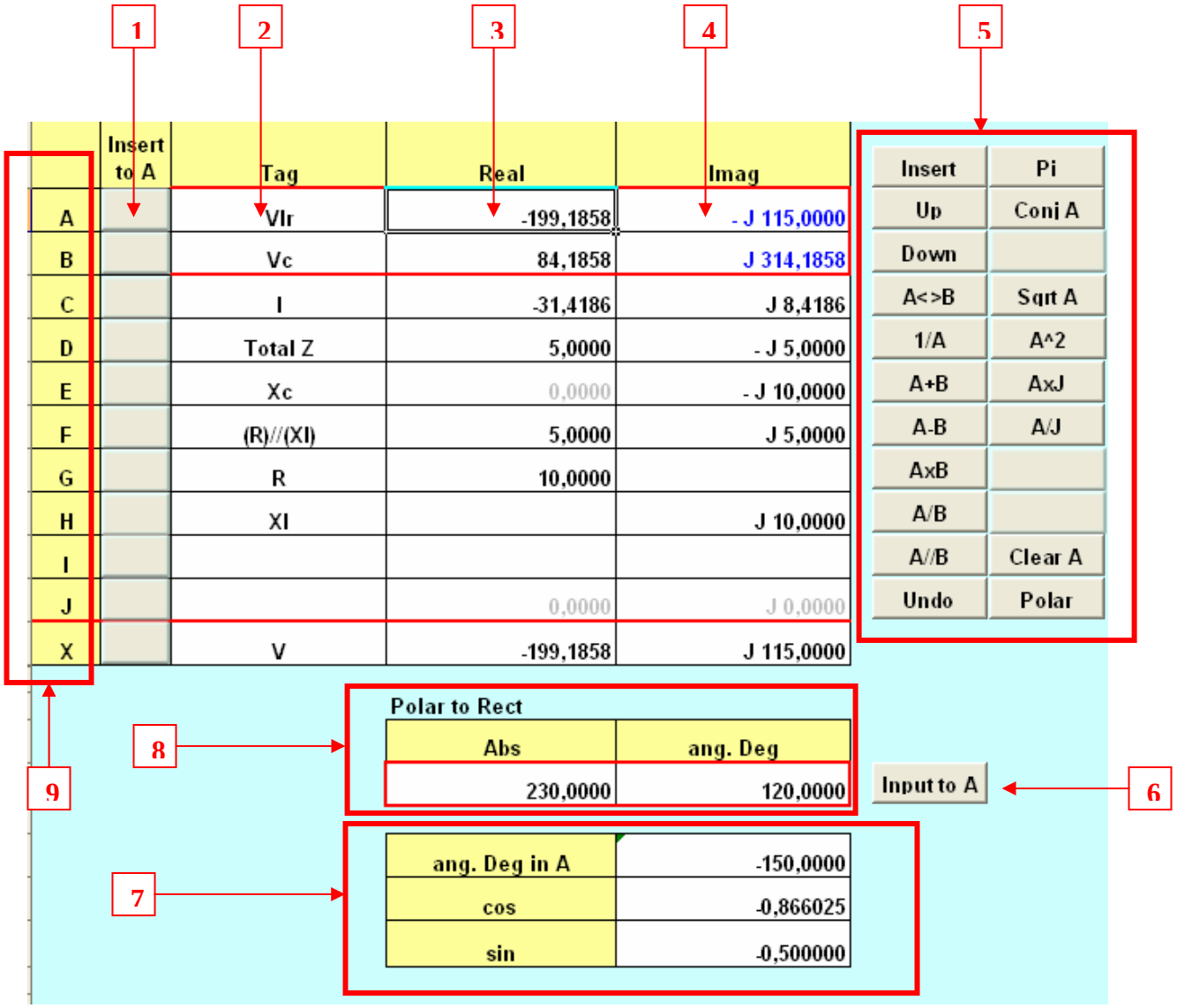
   Y:\IT-Data\Share Program\General Applications\Office 2003 \ PRO11.MSI

   If your computer is not connected to drive Y yet, please run access **Multika share.BAT** by click on icon  access Multika share.BAT (location **I:\IT**)



2. If you see a message that tells you the Analysis Toolpak is not currently installed on your computer, click yes to install it.
3. Click Tools on the menu bar. When you load the Analysis Toolpak, the Data Analysis command is added to the **Tools** menu.

3. Function of Each Button



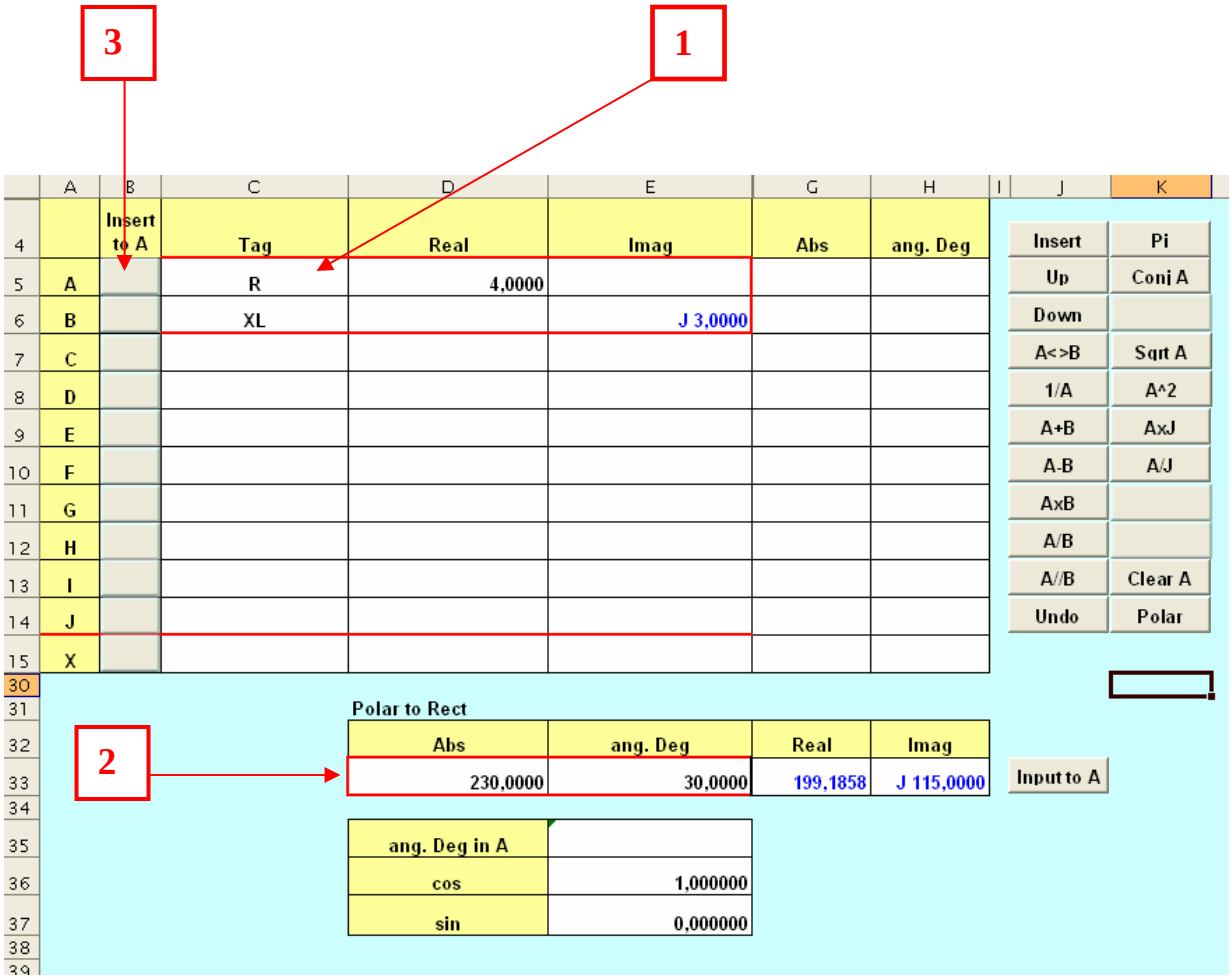
No	Function	No	Function
1	Copy Button		**AxB**: A times by B
2	Variable name (you can input the name of variable here)		**A/B**: A divide by B
3	Real value of variable		**A//B**: A parallel B
4	Imaginer Value of Variable		**Pi**: phi
5	Calculation and Edit Button		**Conj A** : calculate conjugate A
	Insert : Insert new row		**A^2**: Quadrate A
	Up & **Down** : Rearrangement of variable up or down		**Sqrt A**: square root A
	A <> B : change position of variable from Row A to Row B		**AxJ**: A time by j
	1/A : calculate inverse A		**A/J**: A divide by j
	A+B: Sum A and B		**Clear A**: Erase variable in A row
	A-B: A minus B		**Polar**: show polar of variable

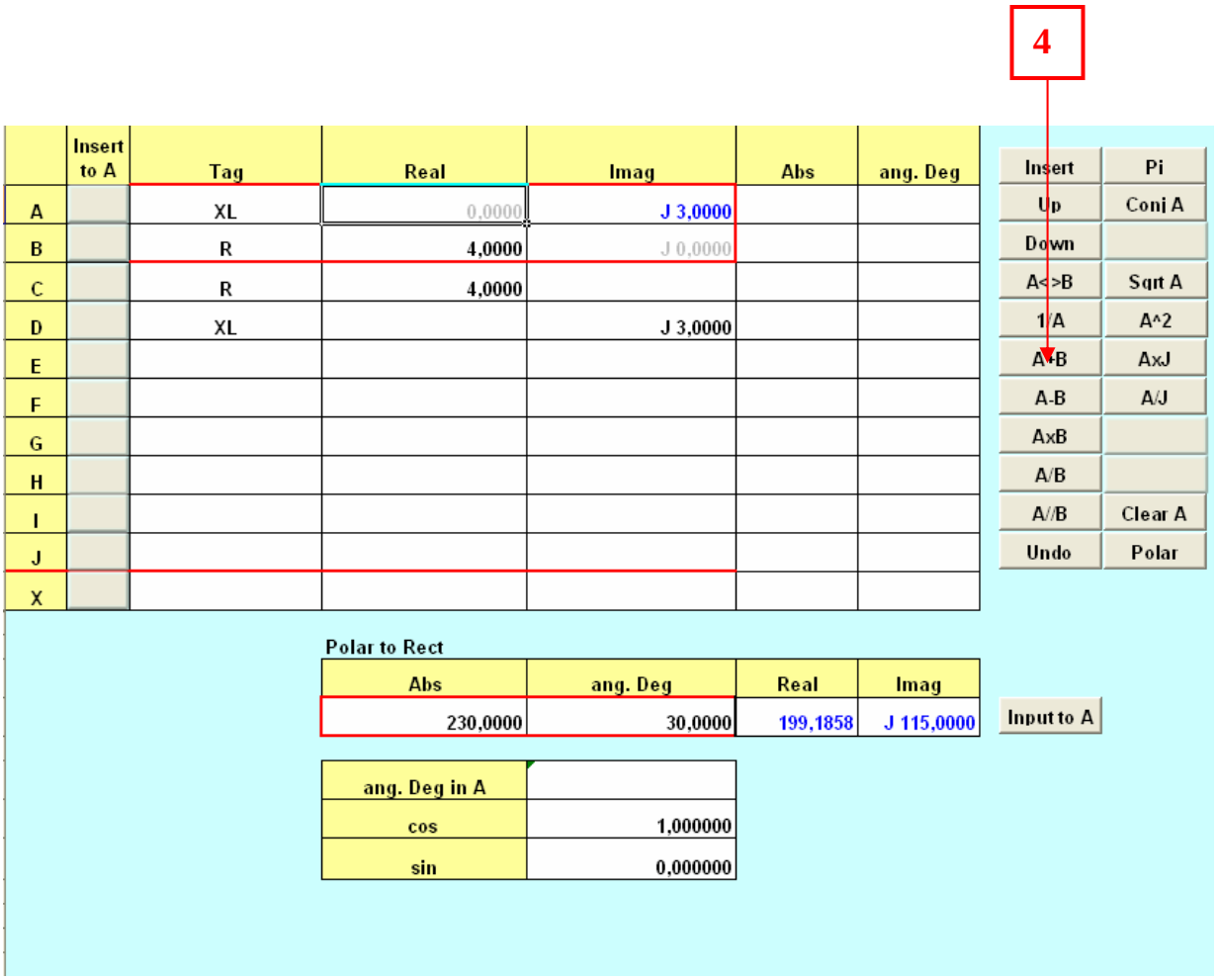
6	Click this button to input result of Polar Converter to A row	8	Polar to Rectangular Converter
7	Angle Box	9	Row name

Note: When we want to run mathematics operation of two variable, they shall be put in A and B row.

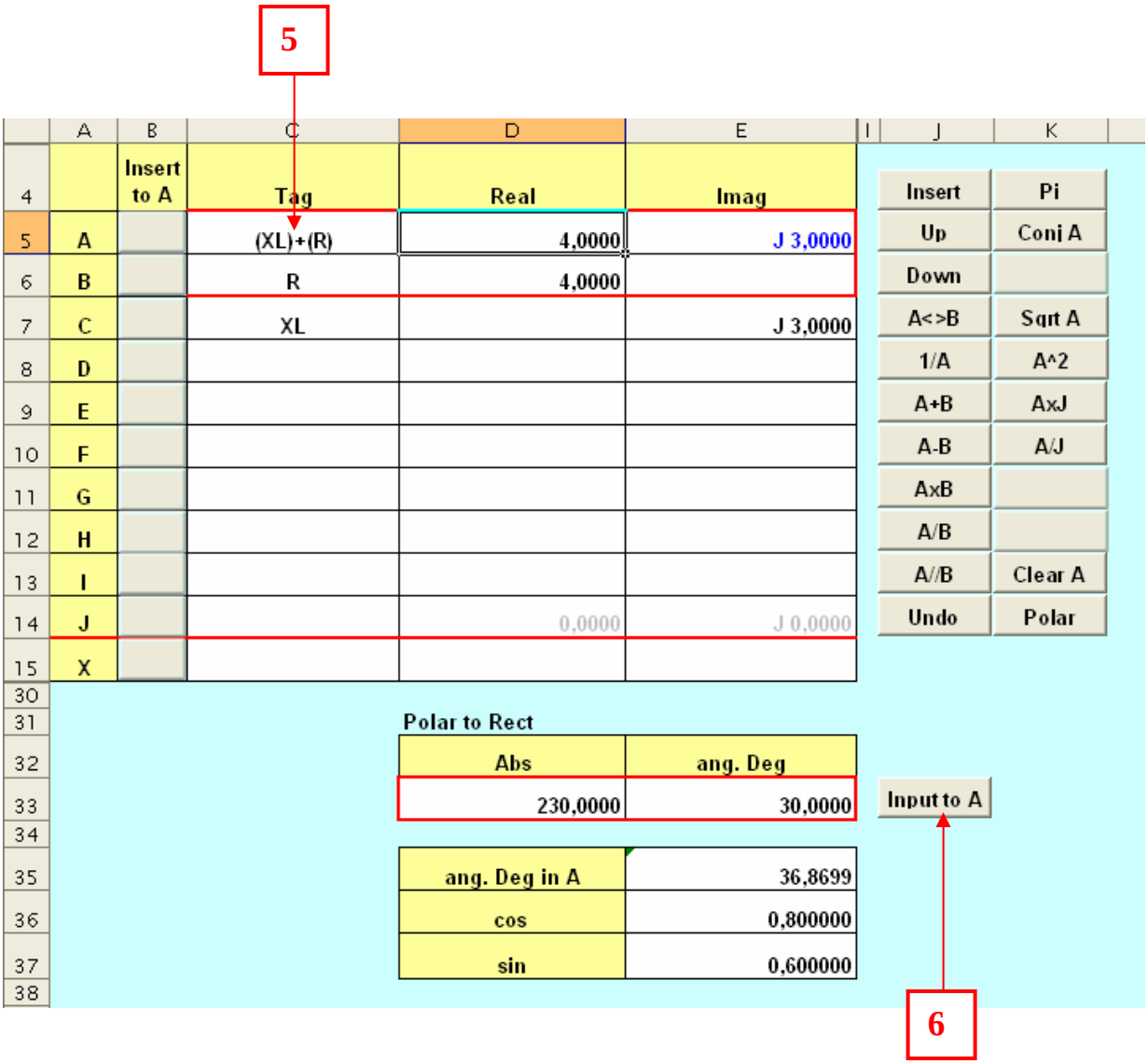
4. Try to use ComlexChainCalc11Mar08.xls to solve Example (attached)

    1. input R, XL
    2. input voltage (230 in Abs Column, and 30 in ang. Dec column)
    3. Copy R and XL, by click on the button next to R and XL
    4. Click on **A + B** Button calculate Z

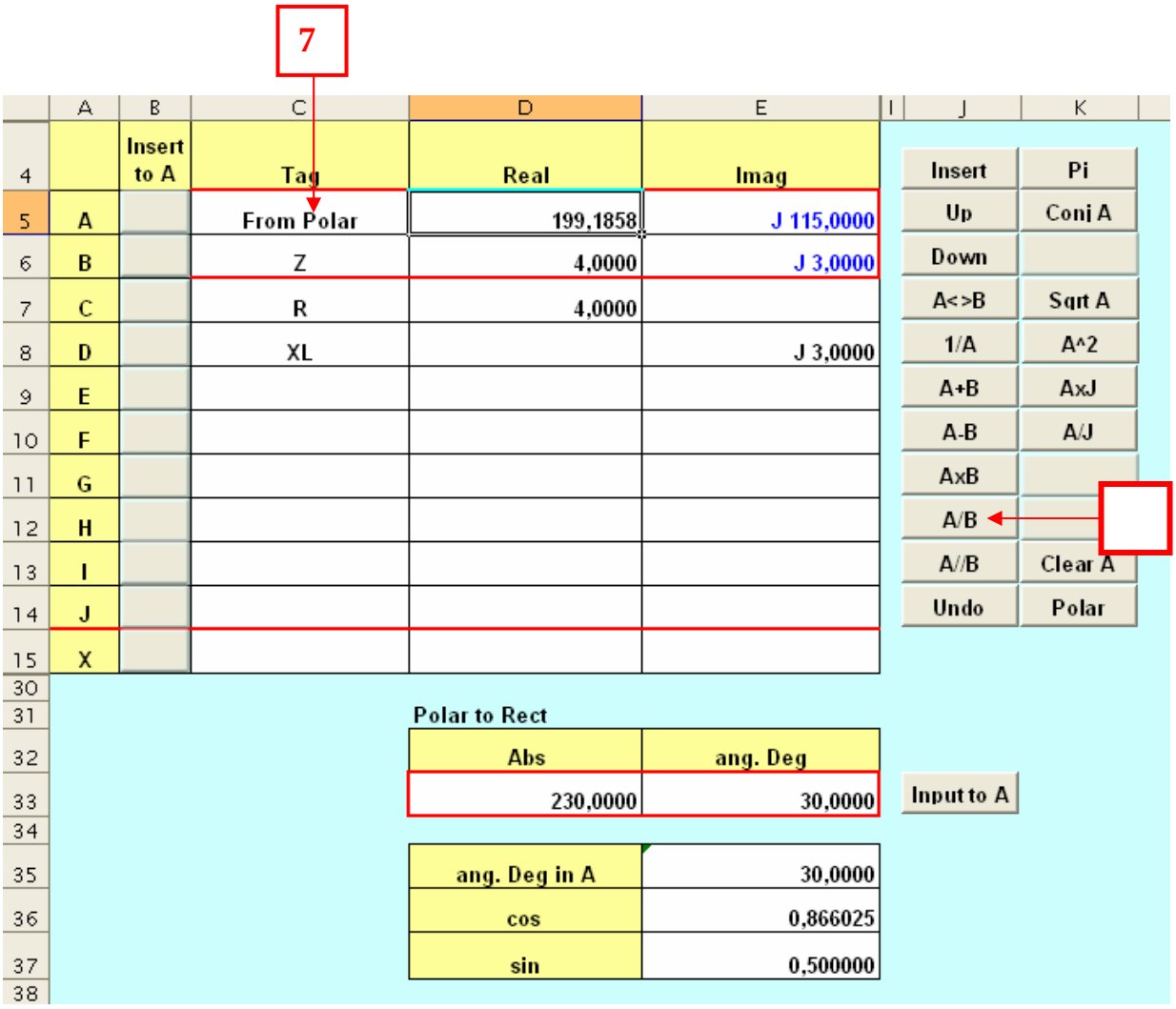


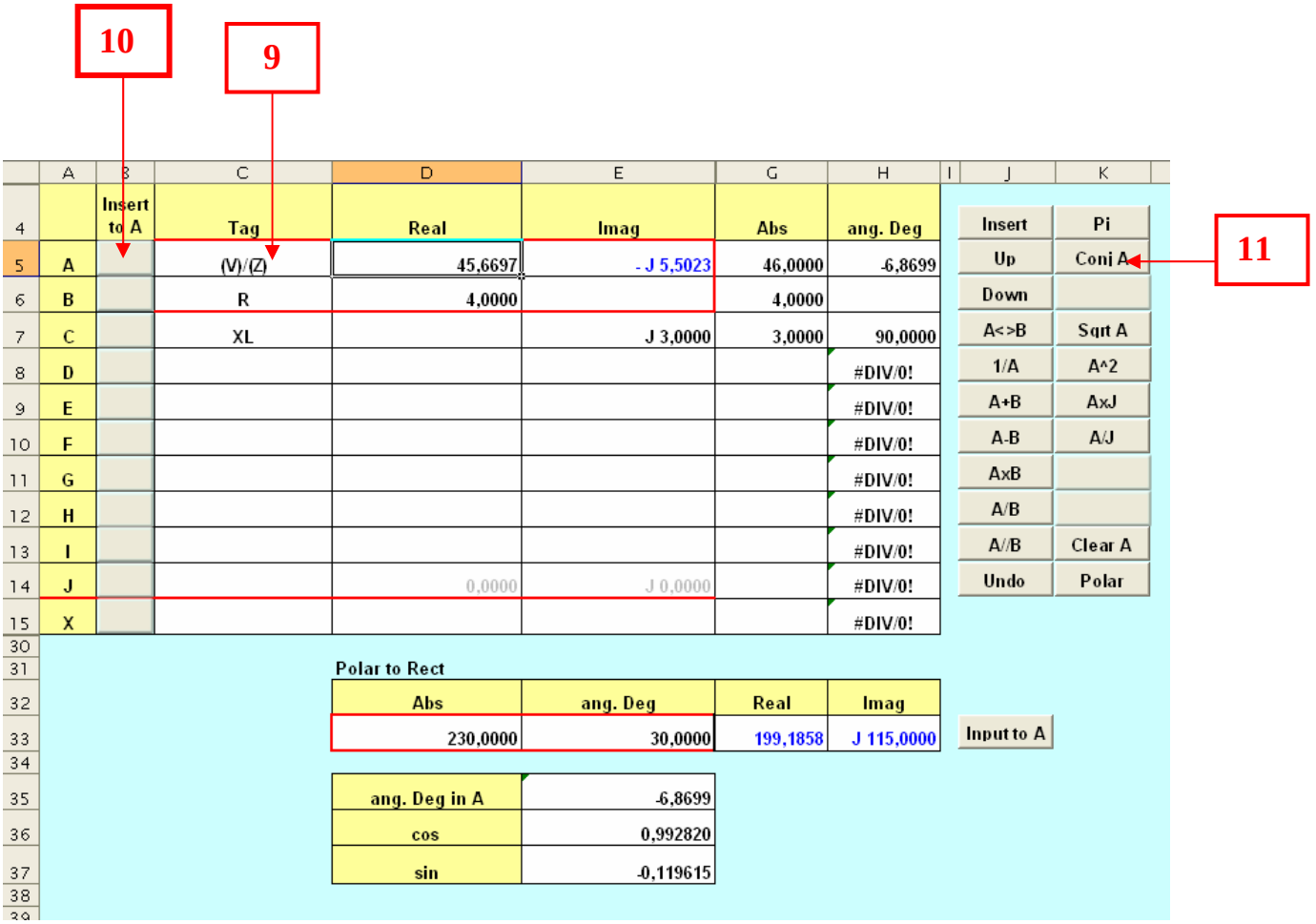


5. Change to **Z**
6. Click **Input to A** button for input voltage to A row

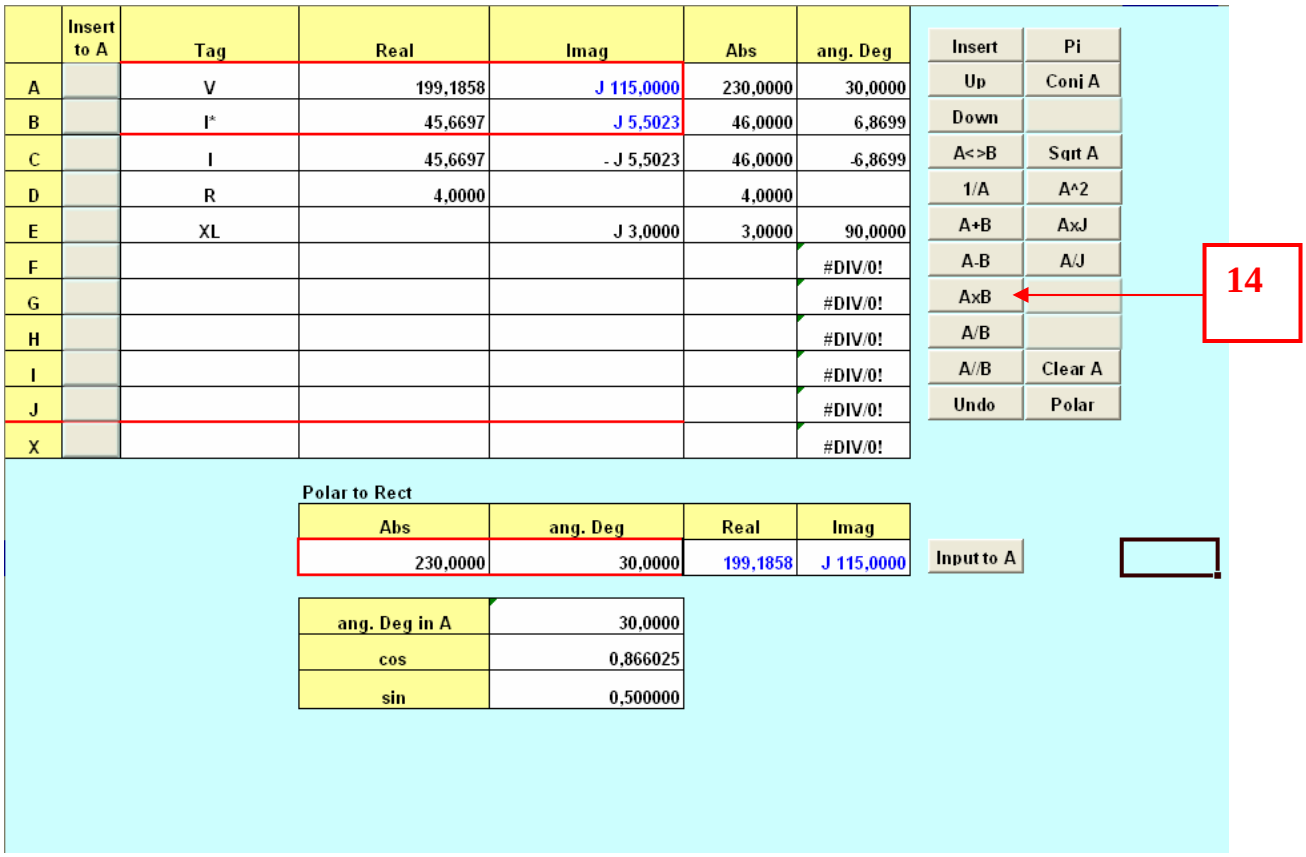


7. Change to **V**
8. Click **A/B** button to calculate **I**
9. Change to **I**
10. Click this button to make copy of **I**


7
Insert to A
Tag
Real
Imag
From Polar
199,1858
J 115,0000
Z
4,0000
J 3,0000
R
4,0000
XL
J 3,0000
Insert
Pi
Up
Conj A
Down
A<>B
Sqrt A
1/A
A^2
A+B
AxJ
A-B
A/J
AxB
A/B
A//B
Clear A
Undo
Polar
Polar to Rect
Abs
ang. Deg
230,0000
30,0000
Input to A
ang. Deg in A
30,0000
cos
0,866025
sin
0,500000



11. Calculate conjugate **I** by click Conj **A** button
12. Change **(Conj I)** to **I***
13. Repeat step 6 & 7 above



	Insert to A	Tag	Real	Imag	Abs	ang. Deg
A		V	199,1858	J 115,0000	230,0000	30,0000
B		I*	45,6697	J 5,5023	46,0000	6,8699
C		I	45,6697	- J 5,5023	46,0000	-6,8699
D		R	4,0000		4,0000	
E		XL		J 3,0000	3,0000	90,0000
F						#DIV/0!
G						#DIV/0!
H						#DIV/0!
I						#DIV/0!
J						#DIV/0!
X						#DIV/0!

Insert | Pi
Up | Conj A
Down |
A<>B | Sqrt A
1/A | A^2
A+B | AxJ
A-B | A/J
AxB |
A/B |
A//B | Clear A
Undo | Polar

14

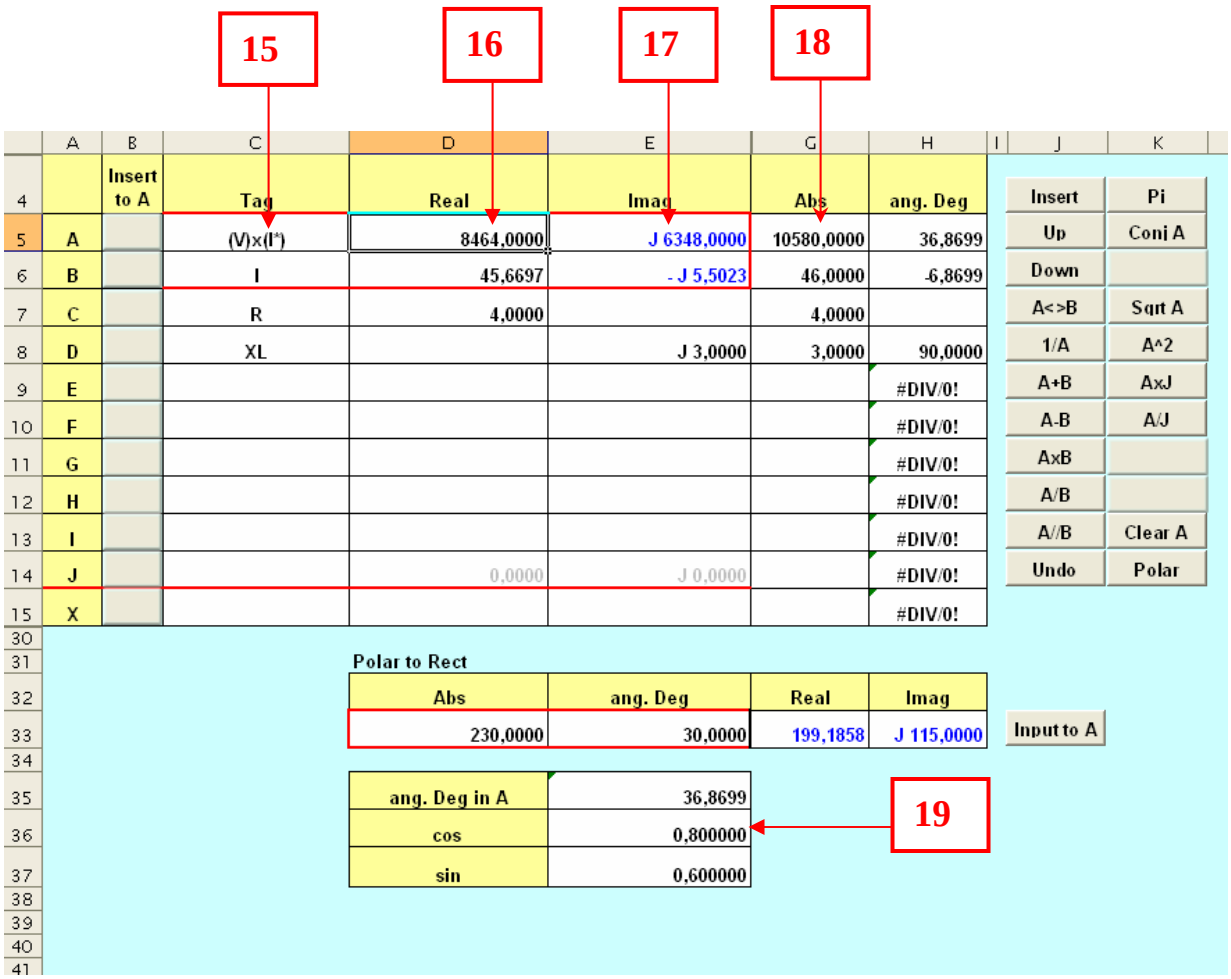
Polar to Rect

Abs	ang. Deg	Real	Imag
230,0000	30,0000	199,1858	J 115,0000

Input to A

ang. Deg in A	30,0000
cos	0,866025
sin	0,500000

14. Click **AxB** button to calculate **S**
15. Change **(V)x(I*) to S. S** is



16. The real power (P), Watt
17. The Imaginer power (Q), VAR
18. The complex power (S), VA
19. Power Factor (PF)

EXAMPLE:

$V_T = 230 \angle 30^0$ Volt
R = 4 ohm
XL = 3 ohm