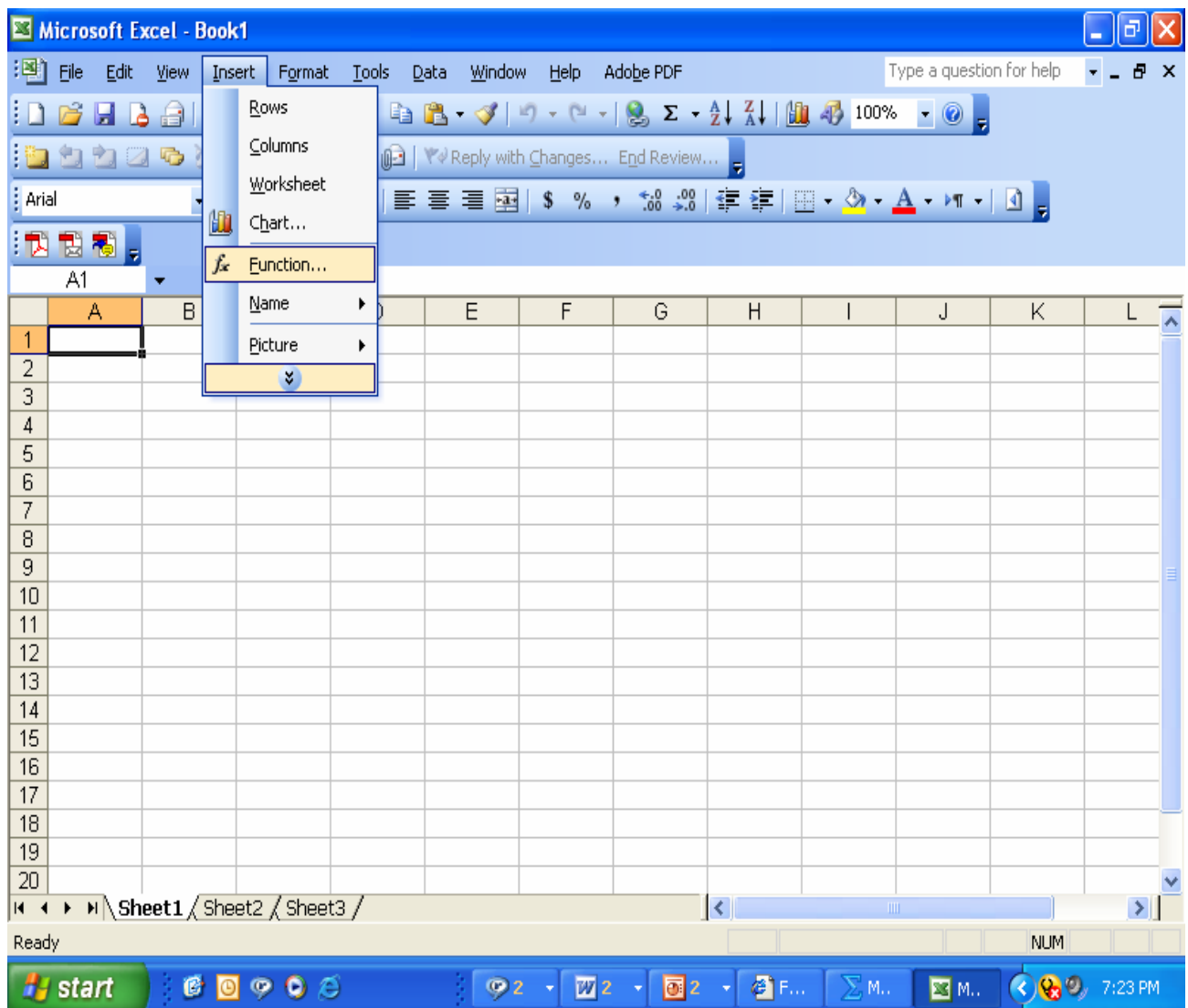


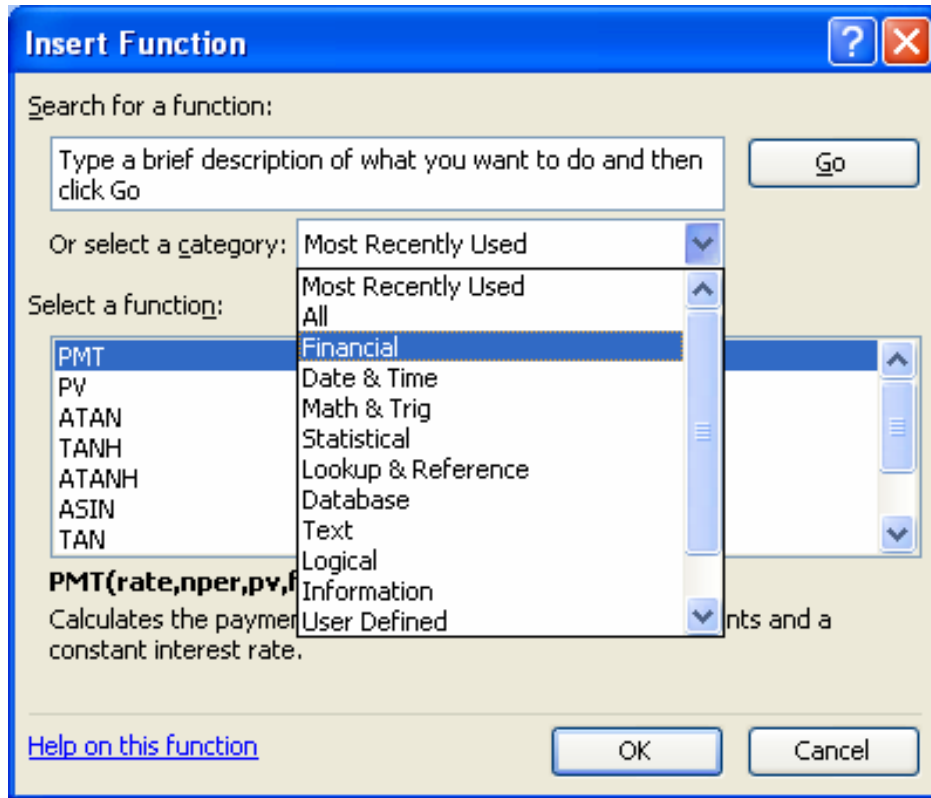
# Time Value of money using Excel

## Future Value calculations

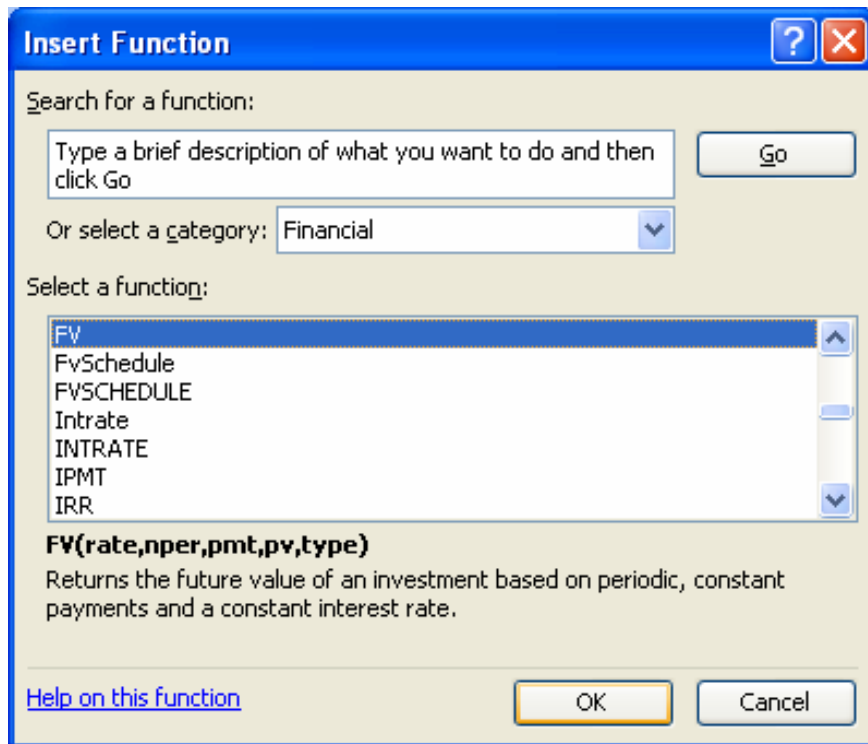
- 1- Open Excel
- 2- Go to (Insert) tap
- 3- Choose (Function)



4- In the (insert function) box  
Select financial form the (select category) menu

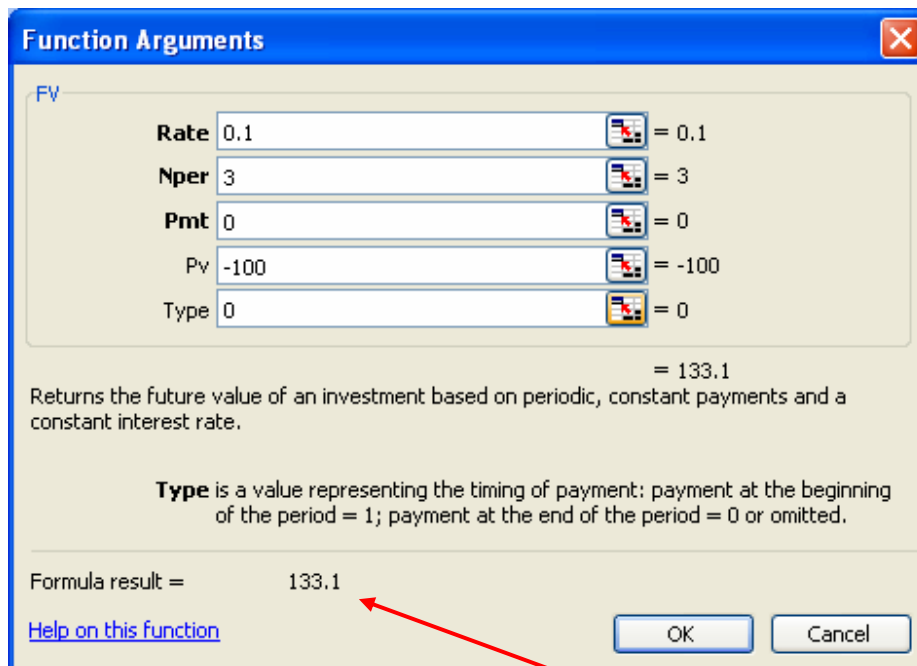


5- From (select a function) menu, choose FV and click OK



5- In (function argument) box, enter  
i (decimal ) in the rate window text  
n in the Nper window text  
0 in the pmt window text  
PV in the PV window text  
0 in the type window text

Then click OK



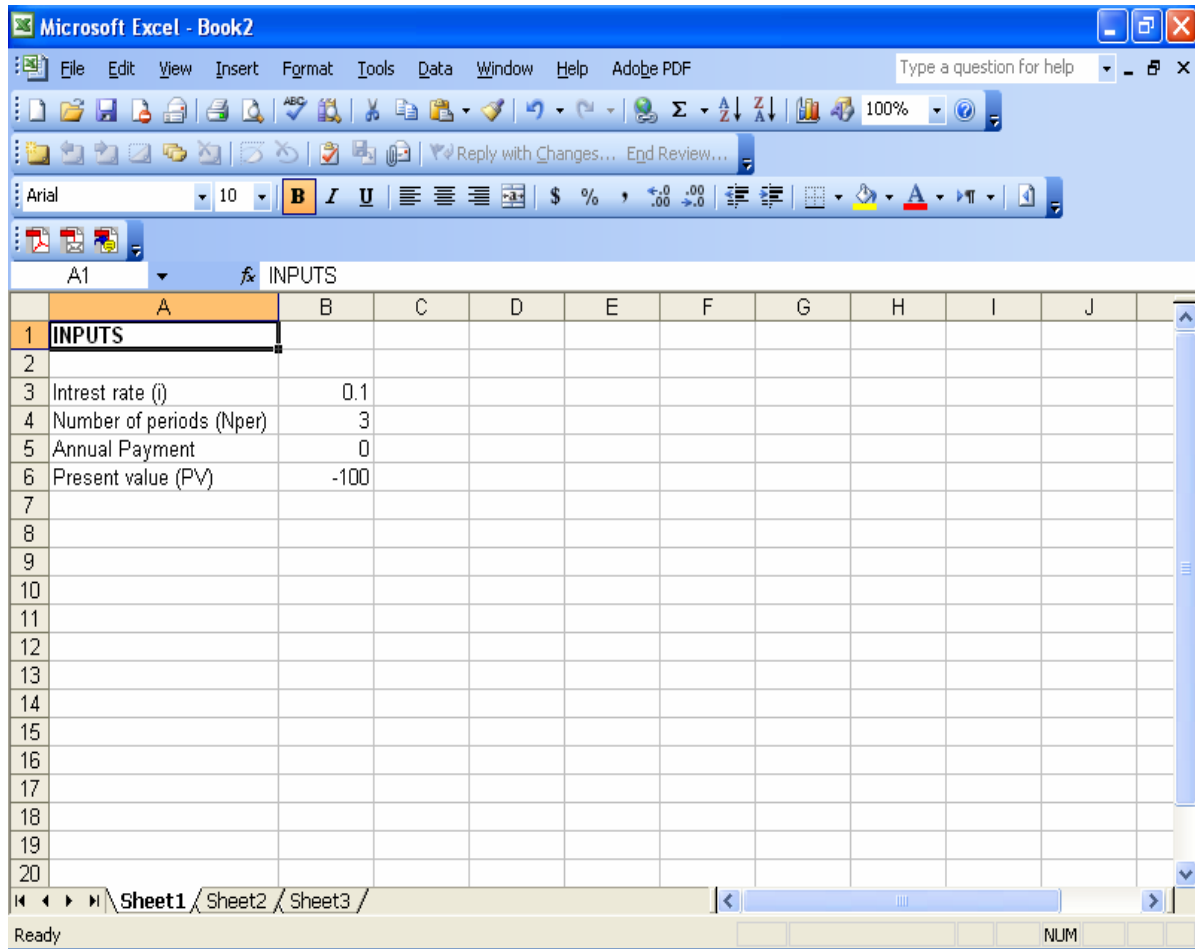
6 - Look at the formula result to find the FV

**Note:**

Rather than entering each value manually, you can choose the cell(s) that include the variable from the speared sheet.

**Example:**

1- Input the values in the sheet as follows:



2- Select the cell that contain the specific value in (function argument) box  
By clicking on this button

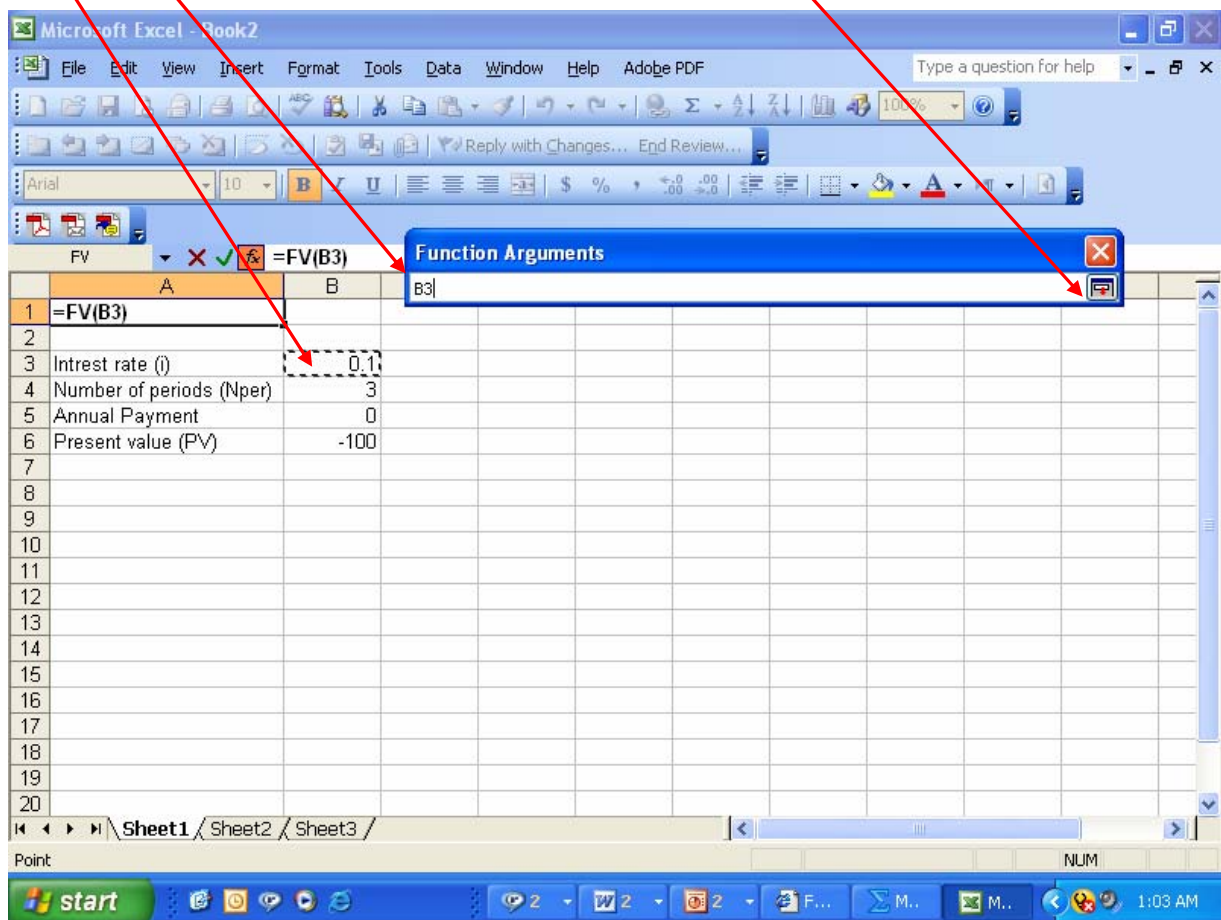
The image shows the 'Function Arguments' dialog box for the FV function. The dialog has a blue title bar with the text 'Function Arguments' and a close button. The main area is light beige and contains the following elements:

- A small 'FV' label in the top left corner.
- Five input fields, each with a label and a selection button (a small icon with a red 'X') and the text '= number' to its right:
  - Rate**: The first field, with a red arrow pointing to its selection button.
  - Nper**: The second field.
  - Pmt**: The third field.
  - Pv**: The fourth field.
  - Type**: The fifth field.
- An equals sign '=' centered below the input fields.
- A descriptive text: 'Returns the future value of an investment based on periodic, constant payments and a constant interest rate.'
- A note: '**Rate** is the interest rate per period. For example, use 6%/4 for quarterly payments at 6% APR.'
- A horizontal line separating the description from the bottom section.
- The text 'Formula result =' followed by a blue hyperlink '[Help on this function](#)'.
- Two buttons at the bottom right: 'OK' and 'Cancel'.

3- For the Rate argument, A text window will open and also your original spreadsheet will open. Select by the mouse the cell that contain the rate value

4- The cell number will automatically appear in the text window

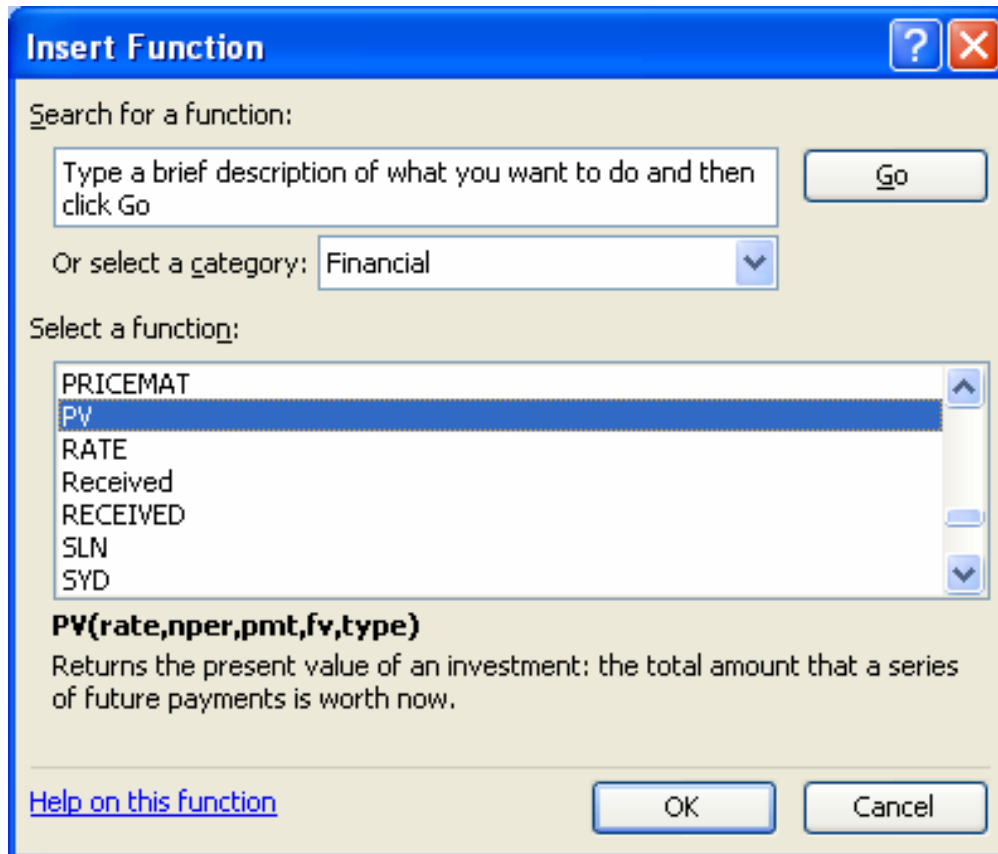
5- Click this button to close the text window



6-Repeat steps (2 to 5 ) for all other inputs

## Present Value calculations

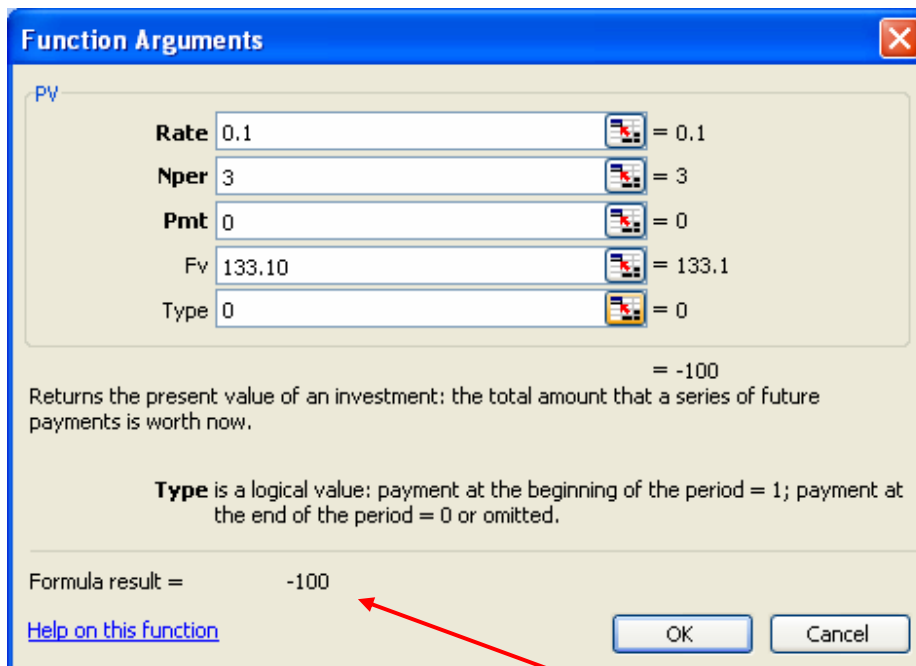
From (select a function) menu, choose PV and click OK





In (function argument) box, enter  
i (decimal ) in the RATE window text  
n in the Nper text window  
0 in the PMT text window  
FV in the FV text window  
0 in the type text window

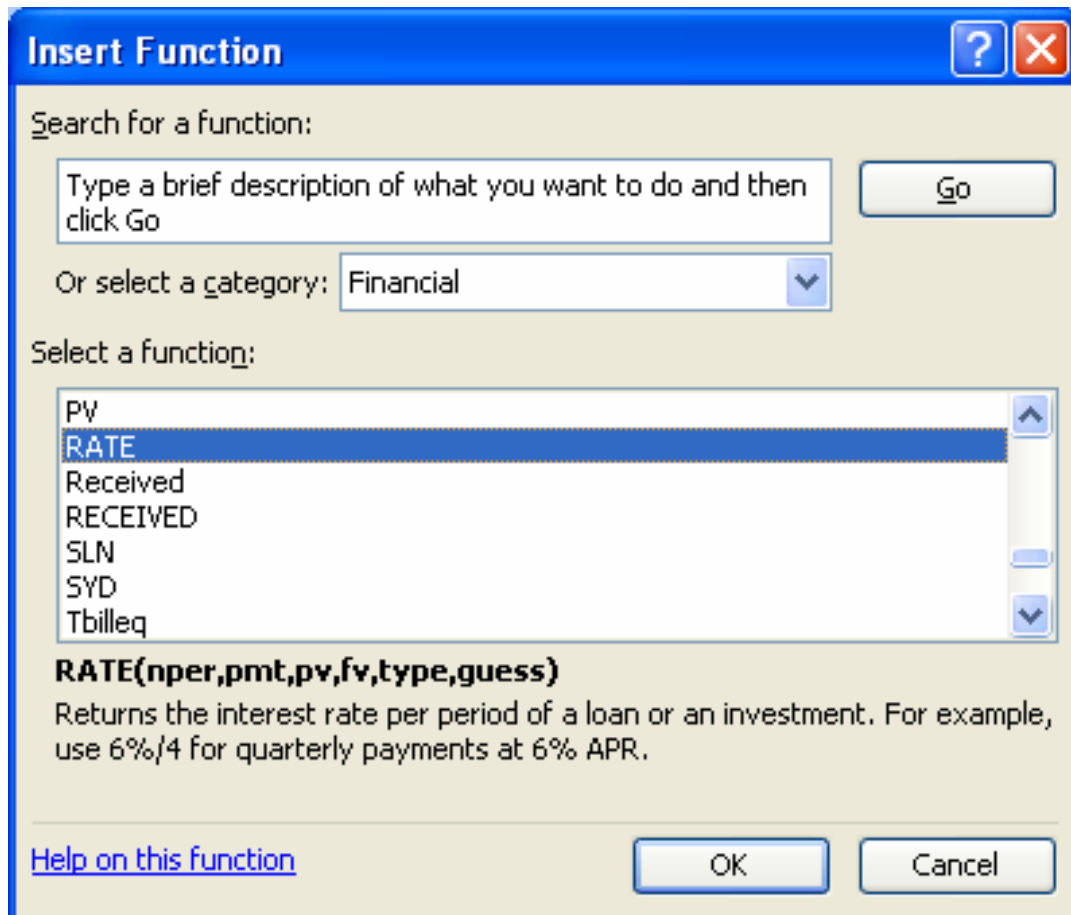
Then click OK



6 - Look at the formula result to find the PV

## Discount Rate Calculations

From (select a function) menu, choose RATE and click OK



In (function argument) box, enter  
n in the Nper text window  
0 in the PMT text window  
PV in the PV text window  
FV in the FV text window  
0 in the type text window

Then click OK

**Function Arguments**

RATE

Nper	3	= 3
Pmt	0	= 0
Pv	-1000	= -1000
Fv	1191	= 1191
Type	0	= 0

= 0.059995253

Returns the interest rate per period of a loan or an investment. For example, use 6%/4 for quarterly payments at 6% APR.

**Type** is a logical value: payment at the beginning of the period = 1; payment at the end of the period = 0 or omitted.

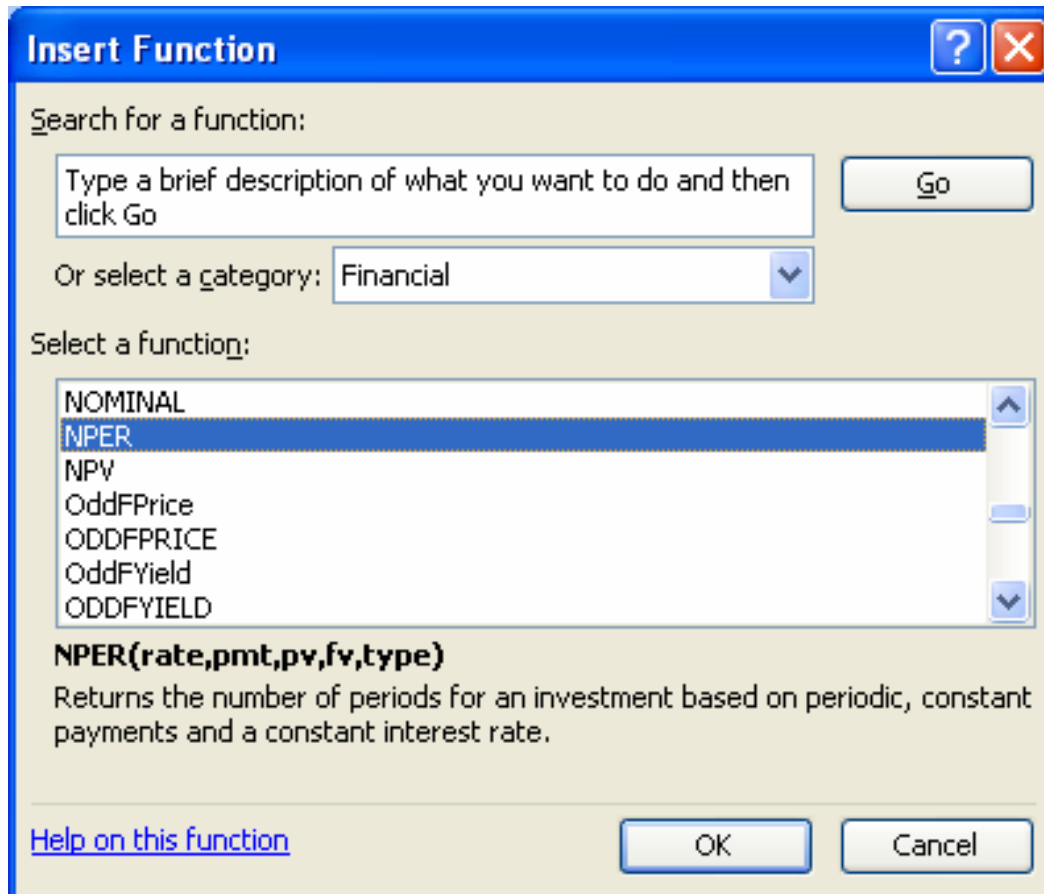
Formula result = 0.059995253

[Help on this function](#) OK Cancel

Look at the formula result to find the interest rate

## Number of periods calculations

From (select a function) menu, choose NPER and click OK



In (function argument) box, enter  
i (decimal) in the RATE window text  
0 in the PMT text window  
PV in the PV text window  
FV in the FV text window  
0 in the type text window

Then click OK

**Function Arguments**

NPV

Rate	0.08	= 0.08
Pmt	0	= 0
Pv	-100000	= -100000
Fv	1000000	= 1000000
Type	0	= 0

= 29.91884022

Returns the number of periods for an investment based on periodic, constant payments and a constant interest rate.

**Type** is a logical value: payment at the beginning of the period = 1; payment at the end of the period = 0 or omitted.

Formula result = 29.91884022

[Help on this function](#) OK Cancel

Look at the formula result to find the number of periods

## Annuities calculations

To calculate Future Value when there are annual payments (annuities), do that:

### For Ordinary Annuity:

In (function argument) box, enter  
i (decimal) in the RATE text window  
n in the Nper text window  
PMT in the PMT text window  
PV in the PV text window  
0 in the TYPE text window (For Ordinary Annuity)

Then click OK

Function Arguments

FV

Rate	0.05	= 0.05
Nper	3	= 3
Pmt	-100	= -100
Pv	0	= 0
Type	0	= 0

= 315.25

Returns the future value of an investment based on periodic, constant payments and a constant interest rate.

**Type** is a value representing the timing of payment: payment at the beginning of the period = 1; payment at the end of the period = 0 or omitted.

Formula result = 315.25

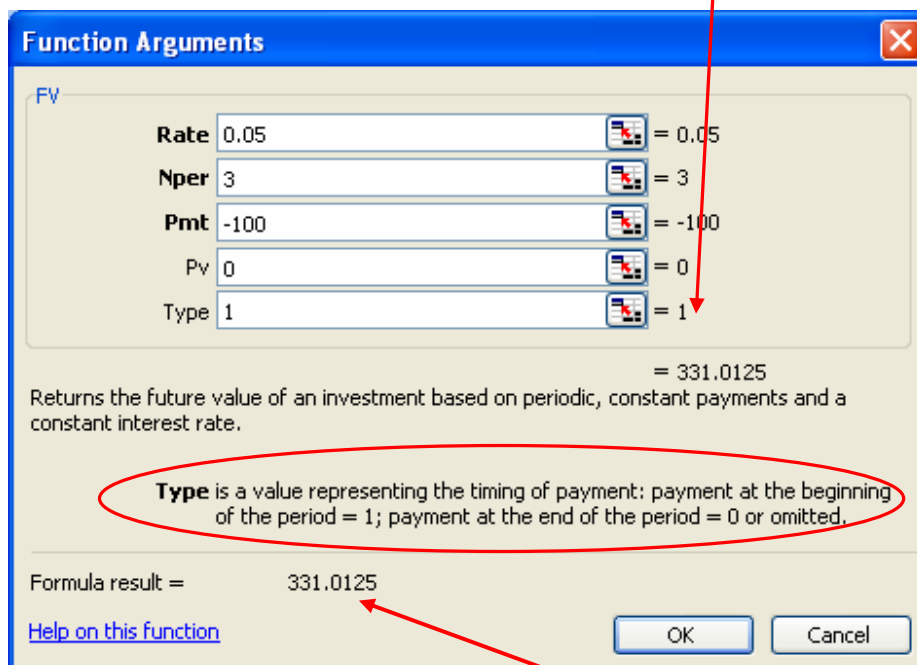
[Help on this function](#) OK Cancel

Look at the formula result to find the future value

For Annuity Due:

In (function argument) box, enter  
i (decimal) in the RATE text window  
n in the Nper text window  
PMT in the PMT text window  
PV in the PV text window  
1 in the TYPE text window (For Annuity Due)

Then click OK



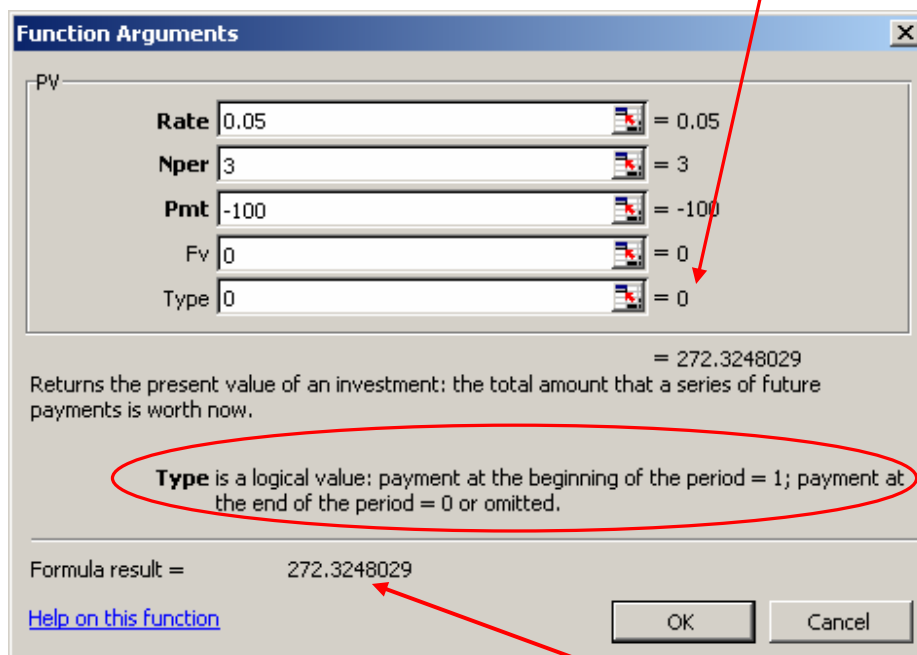
Look at the formula result to find the future value

To calculate Present Value when there are annual payments (annuities), do that:

For Ordinary Annuity:

In (function argument) box, enter  
i (decimal) in the RATE text window  
n in the Nper text window  
PMT in the PMT text window  
FV in the FV text window  
0 in the TYPE text window (For Ordinary Annuity)

Then click OK



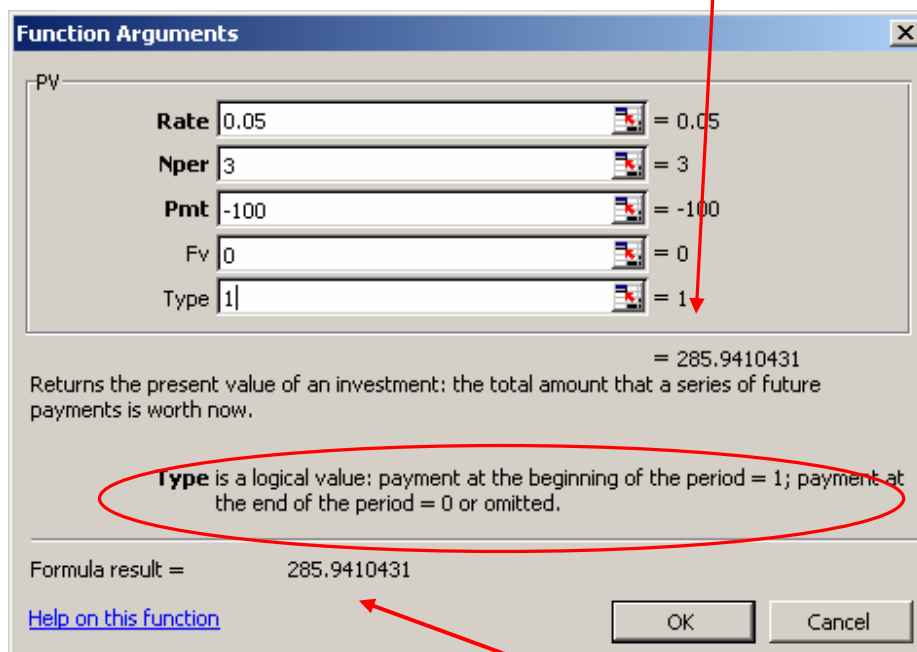
Look at the formula result to find the present value



For Annuity Due:

In (function argument) box, enter  
i (decimal) in the RATE text window  
n in the Nper text window  
PMT in the PMT text window  
FV in the FV text window  
1 in the TYPE text window (For Annuity Due)

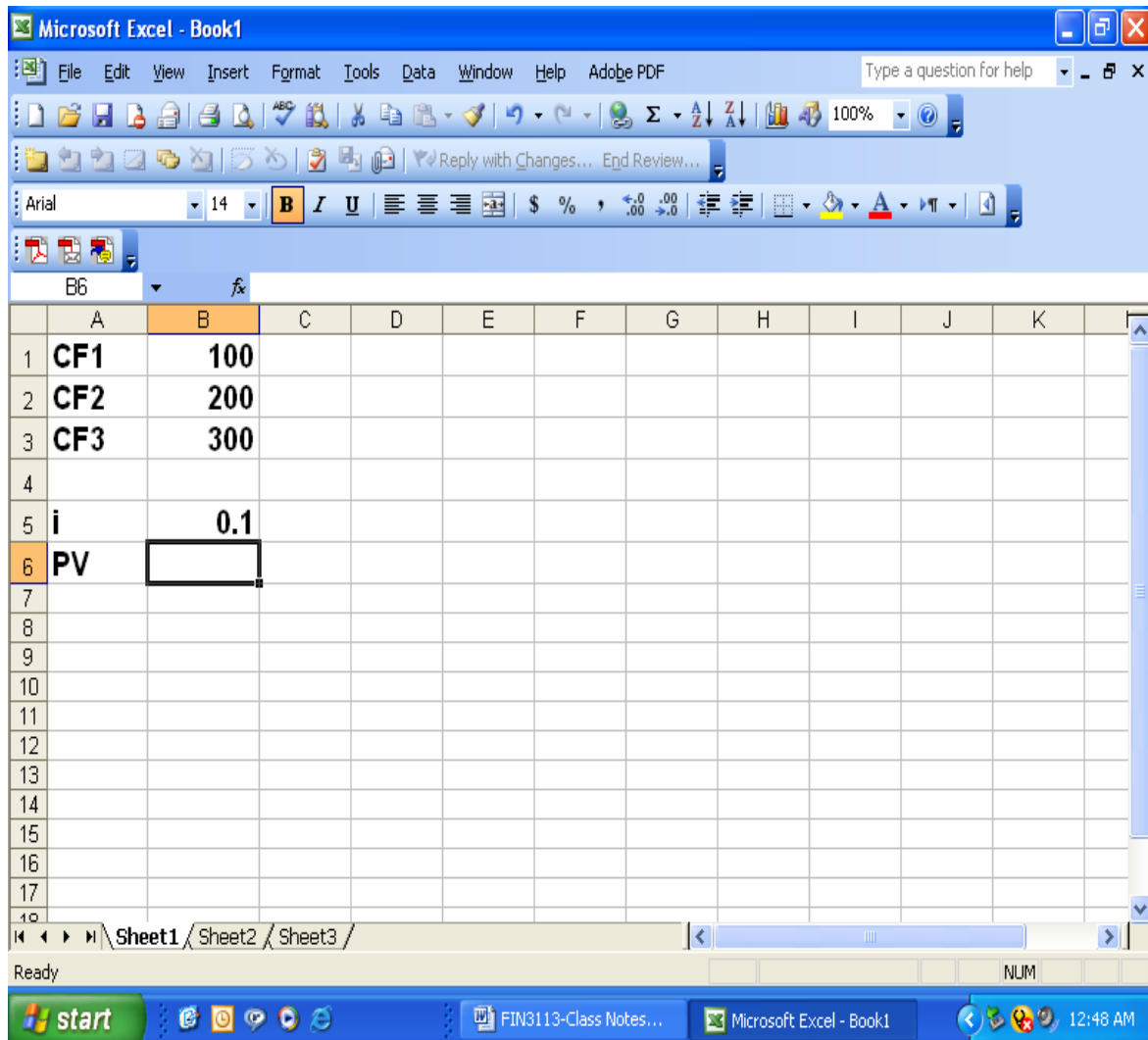
Then click OK



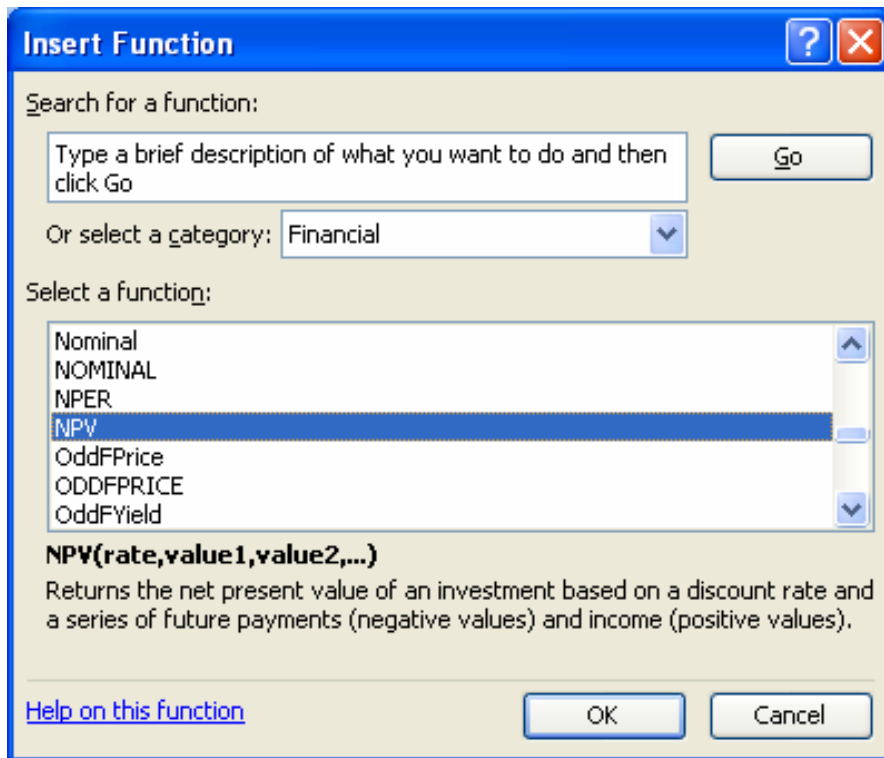
Look at the formula result to find the future value

## The Present Value of Uneven Cash Flows

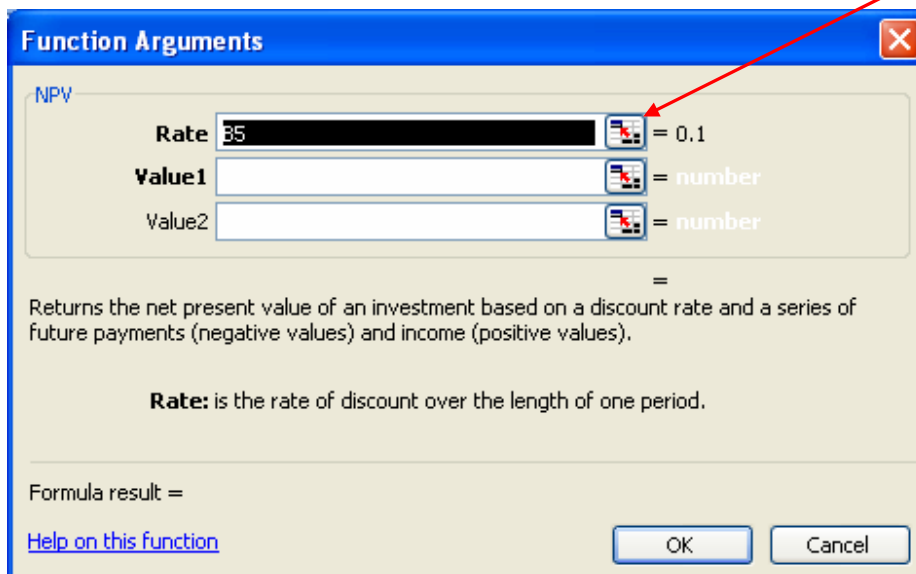
Enter the cash flows in order starting from CF1 in the spread sheet  
And also enter the interest rate.



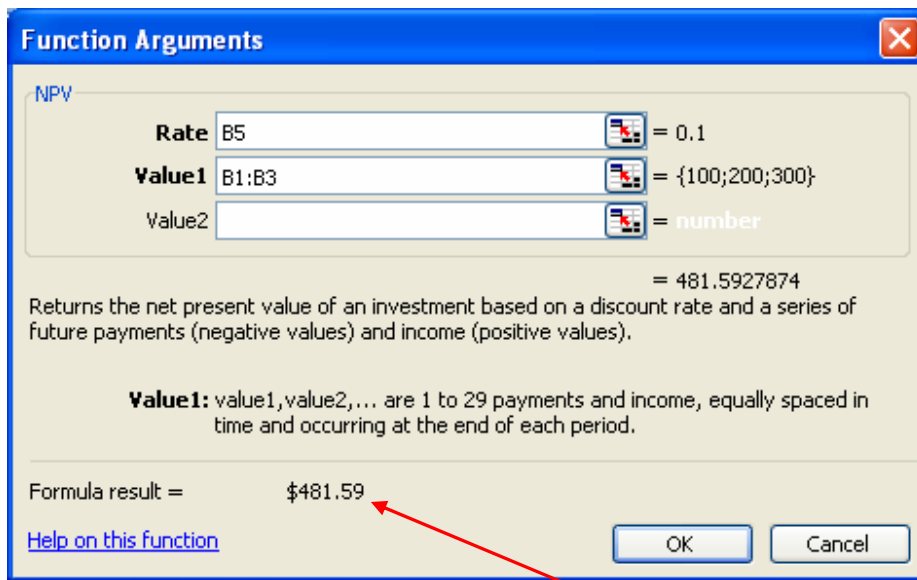
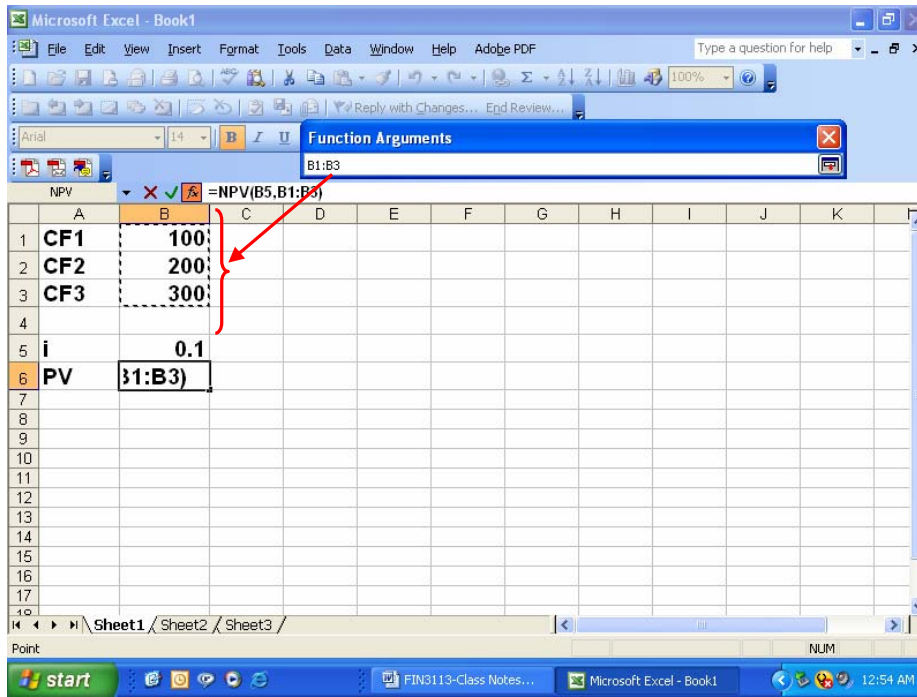
Choose the NPV function form the list of financial functions  
And press OK



When the function argument box open, use the cell selector button to choose the relevant variables.



For cash flows, drag the cursor on the cash flows to select them.



Look at the formula result to find the present value.