

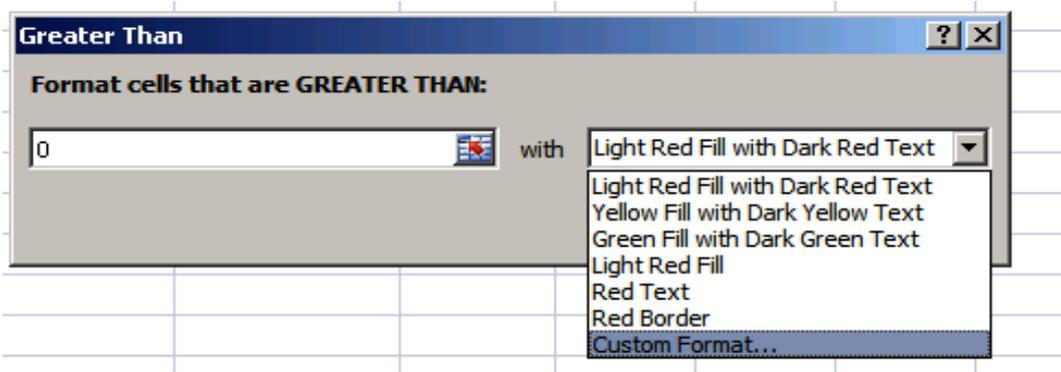
## Solutions Lab-session 3

1) (a)

	A	B	C	D	E
1	Quadratic equations $ax^2 + bx + c = 0$				
2					
3					
4					
5		a		b	c
6		1		2	-34
7					
8	Discriminant:	=C6^2-4*B6*D6			
9	Number of real roots:	=2			
10	Root 1:	real part:	=IF(B8>0;-C6/2/B6+SQRT(B8)/2/B6;-C6/2/B6)	imaginary part:	=IF(B8<0;SQRT(-B8)/2/B6;0)
11	Root 2:	real part:	=IF(B8>0;-C6/2/B6-SQRT(B8)/2/B6;-C6/2/B6)	imaginary part:	=IF(B8<0;-SQRT(-B8)/2/B6;0)
12					

(b) In order to do the conditional formatting you need to consider three cases:  $B8 > 0$ ,  $B8 < 0$  and  $B8 = 0$ . First of all make cell B8 the active cell. In the Home tab select:

- Conditional Formatting → Highlight Cells Rules → Greater Than → In Custom



Format then choose font colour → blue and font style → bold.

- Do again the same, choosing now “Equal To” instead of “Greater than”. In this case the roots will still be real, so the formatting that you have to apply is exactly the same as before.
  - Finally, do again the same, selecting “Less Than” instead. Once in the Custom Format, select the Fill tab and choose the colour red.
- 2) (a) =IF(B4 >40, IF(C4 >=35, IF(D4 >50, IF(E4 >=40, IF(F4 >=40, IF(G4 >=40, "Pass", "Fail"), "Fail"), "Fail"), "Fail"), "Fail"), "Fail")
- (b) =IF(AND(B10 >40, C10 >=35, D10 >50, E10 >= 40, F10 >=40, G10 >=40), "Pass", "Fail")

3)

B3		fx =IF(A1<0;1;IF(AND(A1>=0;A1<=1);A1^2-2*A1+1;IF(AND(A1>1;A1<=2);SQRT(2*A1*(A1-1));2*ABS(A1-3))))									
	A	B	C	D	E	F	G	H	I	J	K
1		5									
2		-2									
3	The function's value for x=A1 is:	<input type="text" value="4"/>									
4	The function's value for x=A2 is:	<input type="text" value="1"/>									

4) The function is:

$$f(x) = \begin{cases} 2 & \text{for } -2 \leq x \leq 2 \\ x & \text{for } x < -2 \\ 4 - x & \text{for } x > 2 \end{cases}$$

A picture of this function would look like:

