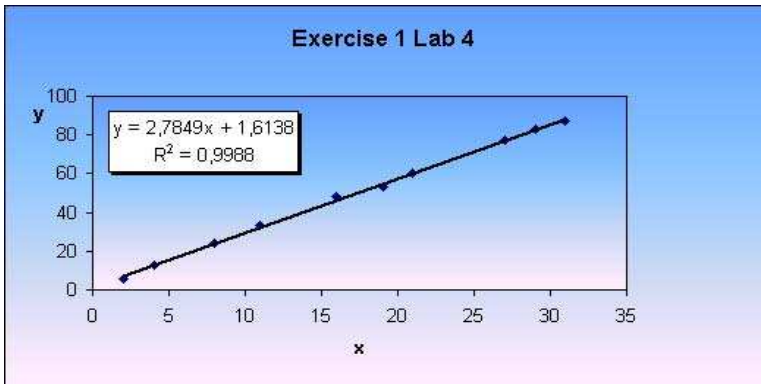
(Part II) Solutions Lab-session 4

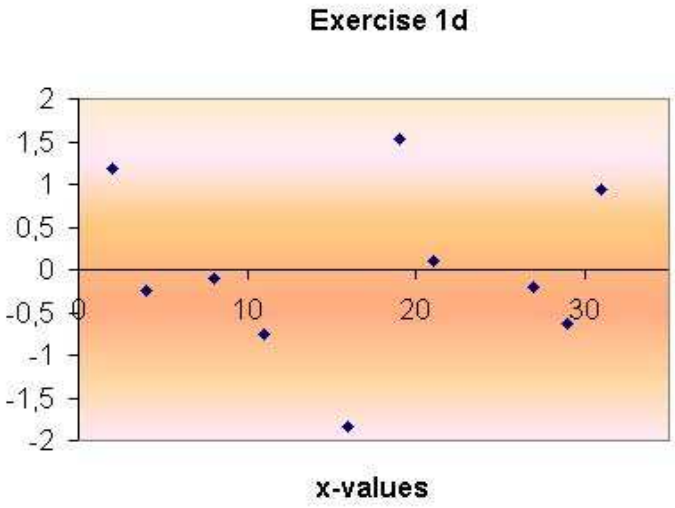
1) a) SLOPE $\rightarrow \alpha = 2.7849$ INTERCEPT$\rightarrow \beta = 1.6138$

b) LINEST $\rightarrow \alpha = 2.7849$, $\beta = 1.6138$, $r^2 = 0.9988$

c)

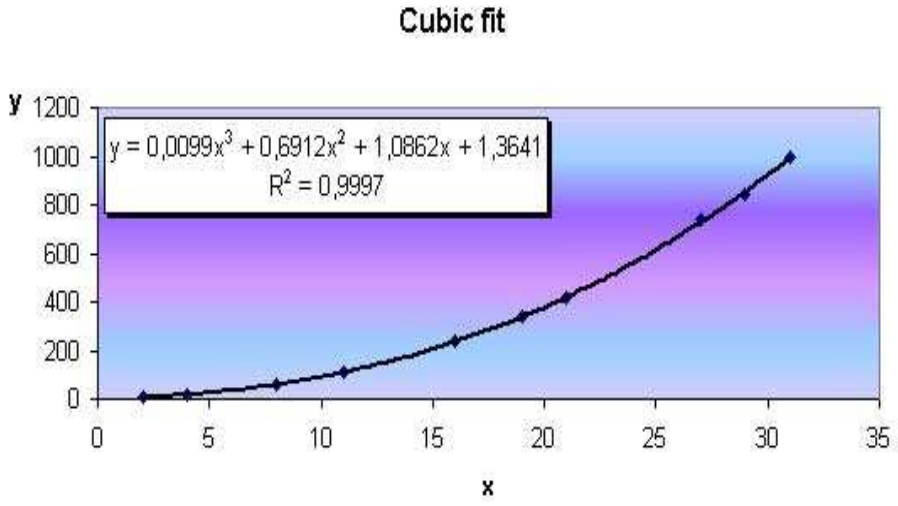


d)



Yes, they are more or less randomly distributed around zero and confirm therefore a linear correlation.

2) The fit is:



3)

```
Sub mean()
Range("a1").Select
meanx = 0
meany = 0
j = 0
'here I assumed that we have 10 rows of data, but you can
'replace 10 and 9 by n and n-1 respectively for a set of n points
For j = 0 To 9
meanx = meanx + 1 / 10 * ActiveCell.Offset(j, 0).Value
meany = meany + 1 / 10 * ActiveCell.Offset(j, 1).Value
Next j
Range("C1").Value = meanx
Range("C2").Value = meany
End Sub
```

4)

```
Sub plotting()
Range("a1").Select
'first we compute the mean values of x and y as in subroutine mean
'again I assume that I have a set of 10 points
meanx = 0
meany = 0
j = 0
For j = 0 To 9
meanx = meanx + 1 / 10 * ActiveCell.Offset(j, 0).Value
meany = meany + 1 / 10 * ActiveCell.Offset(j, 1).Value
Next j
'now we need to compute the three sums that appear in the definitions of the slope, intercept and
'regression coefficient
alpha1 = 0
alpha2 = 0
alpha3 = 0
j = 0
For j = 0 To 9
alpha1 = alpha1 + (ActiveCell.Offset(j, 0).Value - meanx) * (ActiveCell.Offset(j, 1).Value - meany)
alpha2 = alpha2 + (ActiveCell.Offset(j, 0).Value - meanx) ^ 2
alpha3 = alpha3 + (ActiveCell.Offset(j, 1).Value - meany) ^ 2
Next j
slope = alpha1 / alpha2
intercept = meany - slope * meanx
regcoef = alpha1 / Sqr(alpha2 * alpha3)
Range("D1").Value = "the slope is:"
Range("E1").Value = slope
Range("D2").Value = "the intercept is:"
Range("E2").Value = intercept
Range("D3").Value = "the r value is:"
Range("E3").Value = regcoef
End Sub
```