1)

```
Function lhsa(n As Integer) As Single
k = 0
p = 0
Do Until k = n
Do Until p = k + 1
lhsa = lhsa + Sin(2 * p)
p = p + 1
Loop
k = k + 1
Loop
End Function
```
12 points

```
Function rhsa(n As Integer) As Single
rhsa = (n * Sin(2) - Sin(2 * n)) / (4 * Sin(1) ^ 2)
End Function
```
8 points

12 points for function lhsa and 8 points for function rhsa

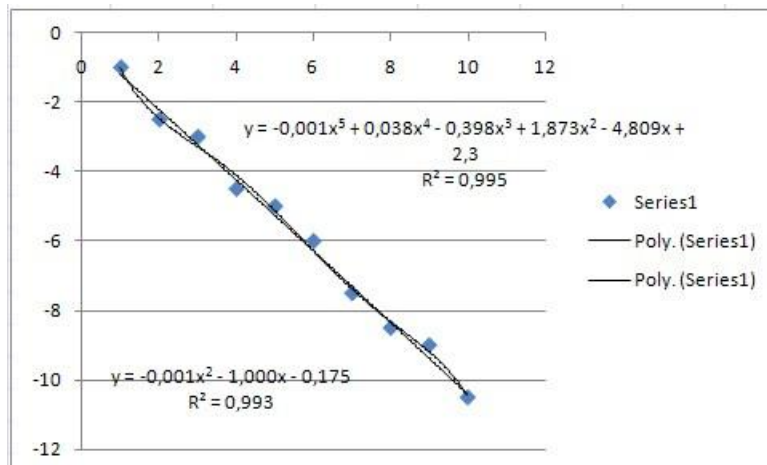lhsa(5)=rhsa(5)=1.79731   lhsa(8)= rhsa(8)=2.670021   (5 points)

3)

α = -1,02121 β=-0,13333   (7 points)

The output from =Linest(B1:B10;A1:A10;true;true) is:

-1,02121	-0,13333
0,029845	0,185184
0,993214	0,271081

therefore r^2=0.993214.   (8 points)

$$y = -0,001x^5 + 0,038x^4 - 0,398x^3 + 1,873x^2 - 4,809x + 2,3$$
$$R^2 = 0,995$$

$$y = -0,001x^2 - 1,000x - 0,175$$
$$R^2 = 0,993$$

The fifth order polynomial seems to be the best fit, as r^2 is slightly closer to 1 in that case (2 points).

Each of the polynomial equations will be awarded 4 points.

2)

```
Sub commute()
Dim A, B As Variant
A = Range("A1:B2").Value
B = Range("A3:B4").Value
Dim C(1 To 2, 1 To 2) As Variant
i = 1
Do While i < 3
j = 1
Do While j < 3
C(i, j) = A(i, 1) * B(1, j) + A(i, 2) * B(2, j) - B(i, 1) * A(1, j) - B(i, 2) * A(2, j)
j = j + 1
Loop
i = i + 1
Loop
Range("D1").Value = "The commutator is:"
Range("E1:F2").Value = C
End Sub
```

4 points for correct loop structure, 8 points for correct computation of C, 4 points for correct definition of A and B, 4 points for correct rendering of output C

A	B	C	D	E	F
2	1		The commutator is:	1	24
0	-1			-3	-1
-2	5				
1	7				

5 points for getting the correct matrix C

4)

```
Sub icon()
Dim ti, pin, p1, p2, p3, p4 As String
ti = "Classifying Icons"
pin = "Enter here and integer number:"
p1 = "This is a Critical Message Icon"
p2 = "This is a Warning Query Icon"
p3 = "This is a Warning Message Icon"
p4 = "This is an Information message Icon"
beginning:
ret = InputBox(pin, ti)
If ret = 16 Then
ret2 = MsgBox(p1, ret, ti)
ElseIf ret = 32 Then
ret2 = MsgBox(p2, ret, ti)
ElseIf ret = 48 Then
ret2 = MsgBox(p3, ret, ti)
ElseIf ret = 64 Then
ret2 = MsgBox(p4, ret, ti)
Else
GoTo beginning
End If
End Sub
```

3 points for variable definitions

2 points for the input box

4 points for each of the five if cases