NAME_____ NO._____ 3/12/2018

1. M=78. Let b = [b_n b_{n-1} ... b_2 b_1] be a binary vector such that M= b_n *2^{n-1}+b_{n-1} *2^{n-2}+ ... b_2 *2 + b_1

   A. (5 points) Write codes to find the remainder of dividing M by 2.

   B. (5 points) Write codes to find the quotient of dividing M by 2.

   C. (10 points) Draw a flow chart to find b for given M.

   D. (5 points) Try to emulate execution of your flow chart to find b and write down b.

   E. (10 points) Write a Matlab function to implement your flow chart

2. (5 points) Write codes to draw f(x)=sin(x) for x in [-2pi 2pi].

3. (5 points) Write codes to draw f(x,y)=x^2+y^2, for x in [-1 1] and y in [-1 1].

4. (5 points) Write codes to draw f(x,y)= sin(x+y) for x and y in [-2pi 2pi]

5. (10 points) Express Taylor series

6. (10 points) State Taylor theorem

7. (10 points) Writes codes to generate inline functions that respectively represent the first and second derivatives of the following functions

   A. tanh(x)

   B. $\frac{1}{\sqrt{2\pi}} \exp(-\frac{x^2}{2})$

8. (10 points) Writes codes to approximate $\frac{1}{\sqrt{2\pi}} \exp(-\frac{x^2}{2})$ within [-0.6 1.4] by a polynomial of degree 3

9. (10 points) Writes codes to approximate tanh(x) within [-0.6 0.6] by a polynomial of degree 4

10. (20 points) b=my_dec2bin(M)

    A. M=78; b=?

    B. M=218; b=?

    Checked by _____ time _____

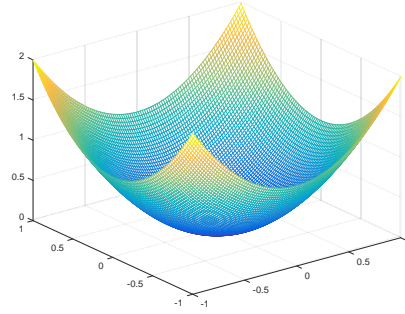11. (15 points) Figures checked by

_____time_____
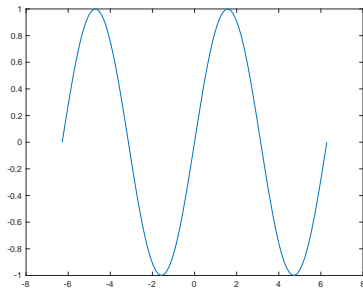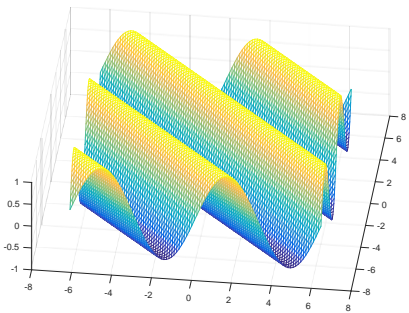
A.   B

C

12. (15 points) Show figure by executing codes in 9.

(Checked by _____time_____)