1. (a) Draw the line plot of the functions : $e^{-0.2x}\sin(2x)$ and $e^{-0.1x}\cos(4x)$, for x=0 : 5*pi, with step of pi/20 in the same figure.
   (b) Use edit mode in Sec. 9.4.1 to insert the x-label, y-label, title, and legend. All of the text can be defined by yourself.
   (c) Use the Figure properties editor (refer to the sec. 9.4.2) to change at least three line properties (like color, line style, etc.).
   (d) Use the handle of the graphic object to do the same things in (c).

2. (a) To plot the surface of the following function:

   $z = 20y^2 e^{-x^2-0.5y^2}$ over the grid defined by

$-2 \le x \le 2$, $-4 \le y \le 4$, where the grid step is 0.1 in both directions.

3. (a) Write a script newquot.m which uses the Newton quotient $[f(x+h) - f(x)]/h$ to estimate the first derivative of $f(x)$. using small values of $h = 10^{-3}$. $f(x) = x^3 + 2x^2 + 5x - 4$.
   (b) Rewrite newquot as a function M-file able to take a handle for f (x) and x value as an input argument, where x=-5 : 5 , with step of 0.1.. And the output argument is the first derivative values of $f(x)$.

4. Instead of 'white loop' by using (for & if break). (hint: the script is to implement the newton's method in book (sec. 7.1 p. 164)),

```
steps = 0; % iteration counter
x = input( 'Initial guess: '); % estimate of root
re = 1e-8; % required relative error
myrel = 1;
while myrel > re & (steps < 20)
    xold = x;
    x = x - f(x)/df(x);
    steps = steps + 1;
    disp( [x f(x)] )
    myrel = abs((x-xold)/x);
end
if myrel <= re
    disp( 'Zero found at' )
    disp( x )
else
    disp( 'Zero NOT found')
end
```