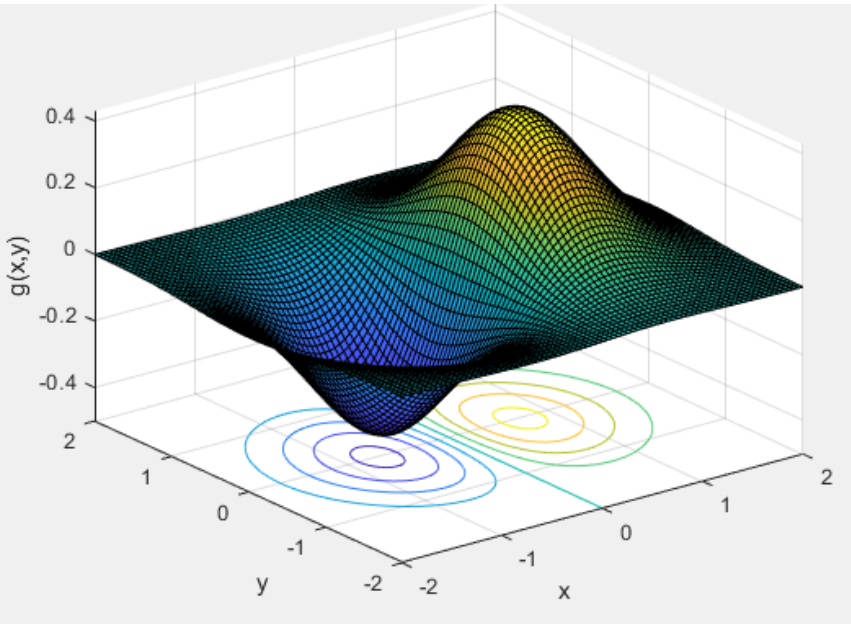
1)a) Graph:

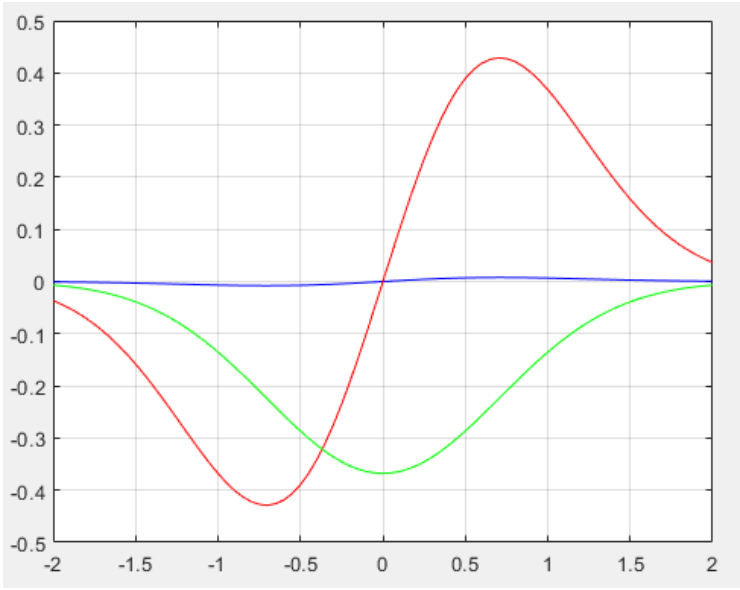


Code:

```
%Lab 9
domain_x = [-2:0.05:2] %Making the requested domain for x
domain_y = [-2:0.05:2] %Making the requested range for y
[X,Y] = meshgrid(domain_x, domain_y) %Plotting the assigned graph
Z = X.*exp(-X.^2-Y.^2) %Writing down the assigned function
surfc (X, Y, Z);
xlabel('x'); %Labelling x-axis
ylabel('y'); %Labelling y-axis
zlabel('g(x,y)') %Labelling the g-axis
```

b)

Graph:



, where the red line is i), the blue line is ii) and the green line is iii).

Code:

```
%Lab 9
domain_x = [-2:0.05:2] %Making the requested domain for x
domain_y = [-2:0.05:2] %Making the requested range for y
[X,Y] = meshgrid(domain_x, domain_y) %Plotting the assigned graph
Z = X.*exp(-X.^2-Y.^2) %Writing down the assigned function
surfc (X, Y, Z);
xlabel('x'); %Labelling x-axis
ylabel('y'); %Labelling y-axis
zlabel('g(x,y)') %Labelling the g-axis
plot(domain_x,Z(1,:),'b-');
hold on;
plot(domain_x,Z(41,:),'r-');
hold on;
plot(domain_y,Z(:,21),'g-')
grid on;
```

c)

```
M=max(max(Z)) %finding maximum value of Z
V=min(min(Z)) %finding minimum value of Z
```

Using this, we can conclude that min and max are at -0.4288 and 0.4288 and min and max are at (-0.700,0) and (0.700,0) respectively.

d) Meshgrid returns the 2D or 3D grid coordinates based on the x, y or z vectors. The graph represented by the x and y coordinates has length (y) rows and length (x) columns.

e) My 3D plot and 2D plots make sense. The 3D one makes sense because it corresponds to the function g(x,y) that was given. Desmos graphing software was used to confirm this. My 2D plots consisting of g(x,-2), g(-1,y), g(x,0) all makes sense because they represent the plot when y=-2, x=-1 and y=0 respectively. It shows that these values are all constants while x and y are variables and for that reason they make sense.