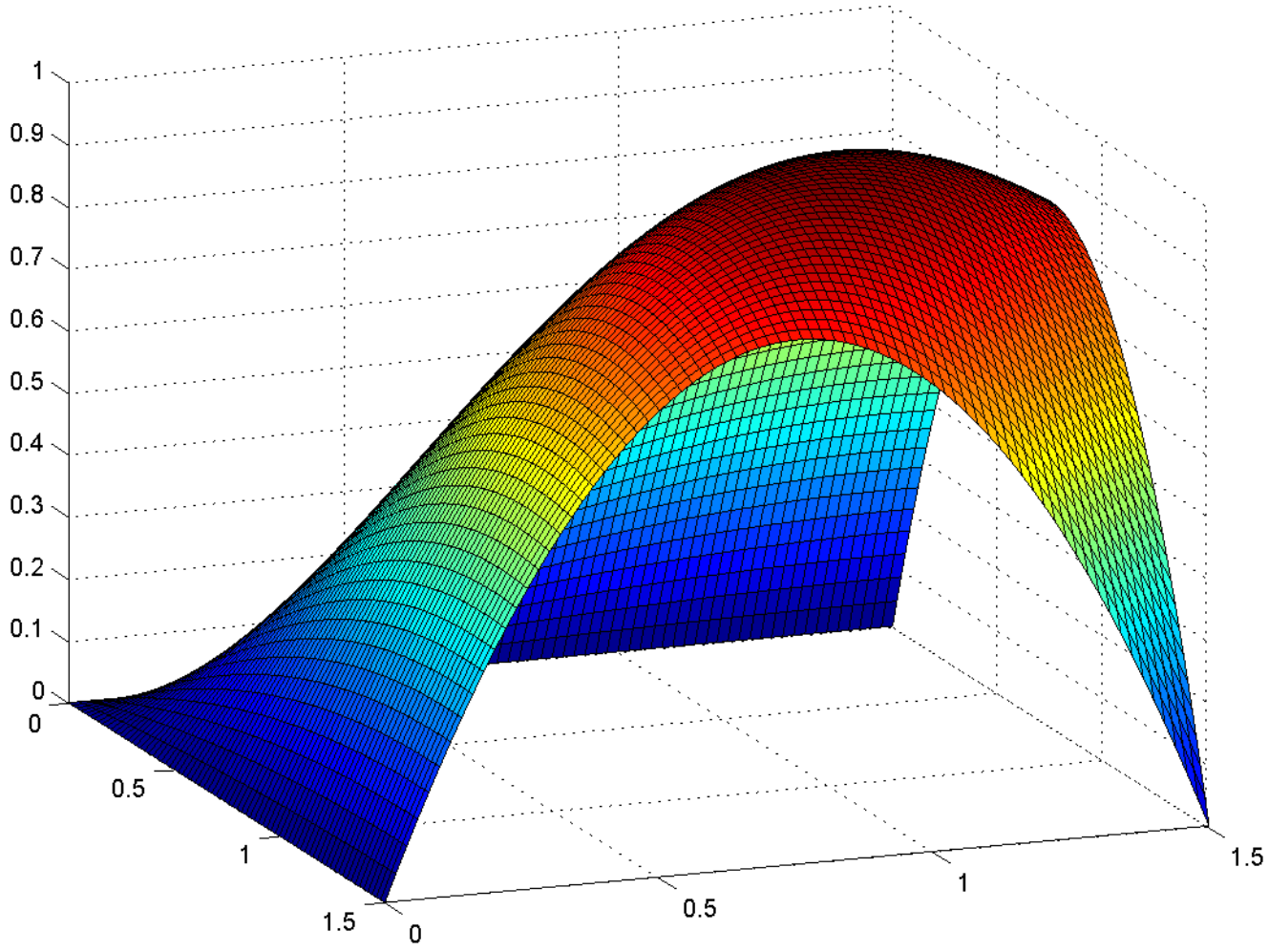
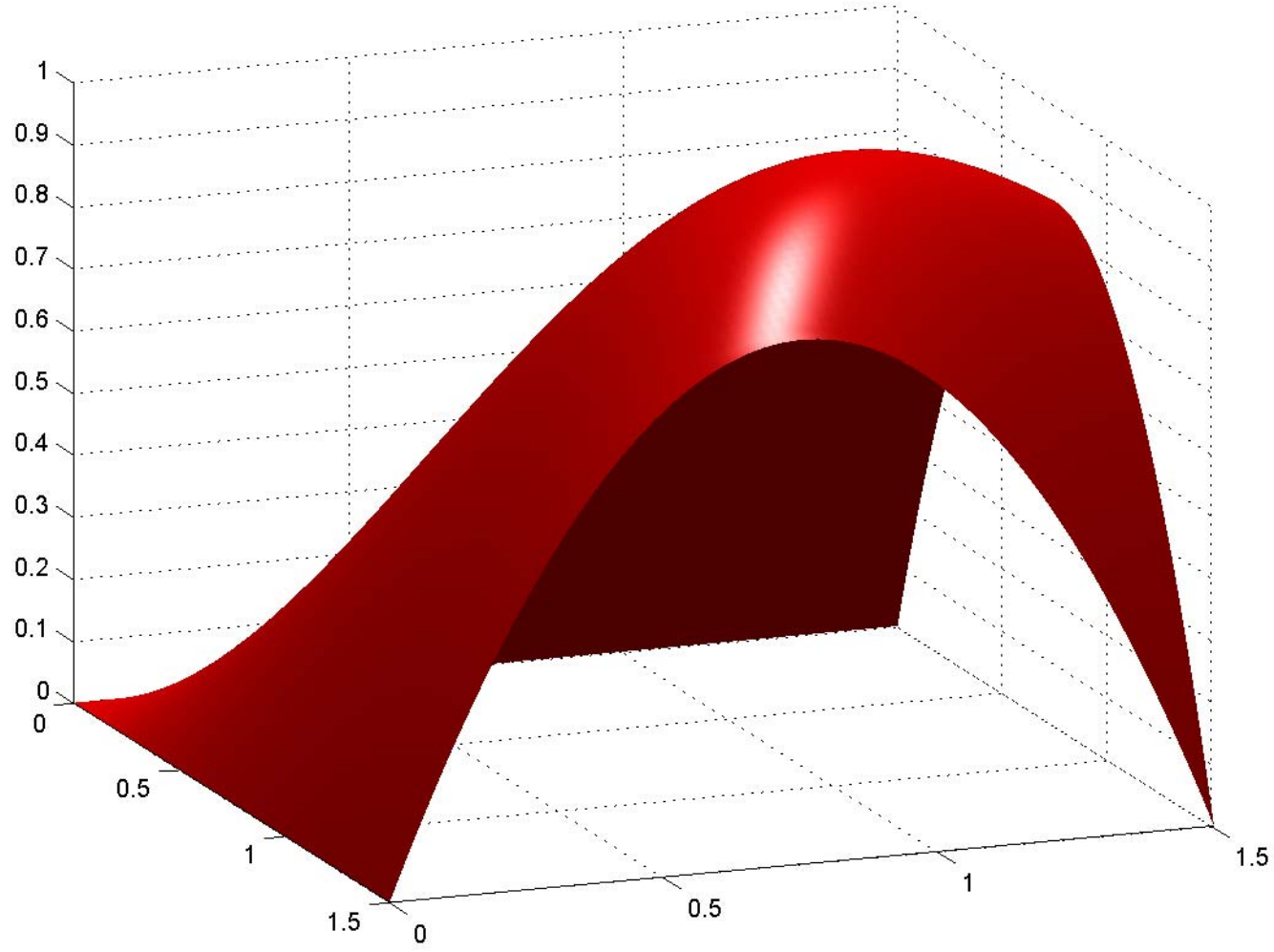
```
% program for the gradient
% Robert Denk 10.4.2005
clear all;
close all;

vect = 0:0.02:1.5;

[x,y] = meshgrid(vect,vect);
z = x.*y.*(3-x-y);
figure(1);
set(gcf,'Position',[1 440 1024 672]);
surf(x,y,z);
view(69,19)

figure(2);
h = surf(x,y,z);
set(gcf,'Position',[1 440 1024 672]);
view(69,19);
set(h,'FaceColor',[1 0 0]);
set(h,'FaceLighting','gouraud');
light('Position',[-2,2,20])
set(h,'EdgeColor','none')


figure(3);
set(gcf,'Position',[1 440 1024 672]);
contour(vect,vect,z,20);
grid;

[x,y] = meshgrid(0:0.05:1.5, 0:0.05:1.5);
z = x.*y.*(3-x-y);
[u v] = gradient(z);
figure(4);
set(gcf,'Position',[1 440 1024 672]);
contour(x,y,z,20)
grid;
hold on
quiver(x,y,2*u,2*v);
hold off

[x,fval] = fminsearch(@(x)-x(1)*x(2)*(3-x(1)-x(2)),[0 0]);
fval = -fval;
display(['Maximum ' num2str(fval,10) ' an der Stelle [' num2str(x,10) ']'   ])

figure(4);
figure(3);
figure(2);
figure(1);


```


1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
0.5
1
1.5
0
0.5
1
1.5


1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
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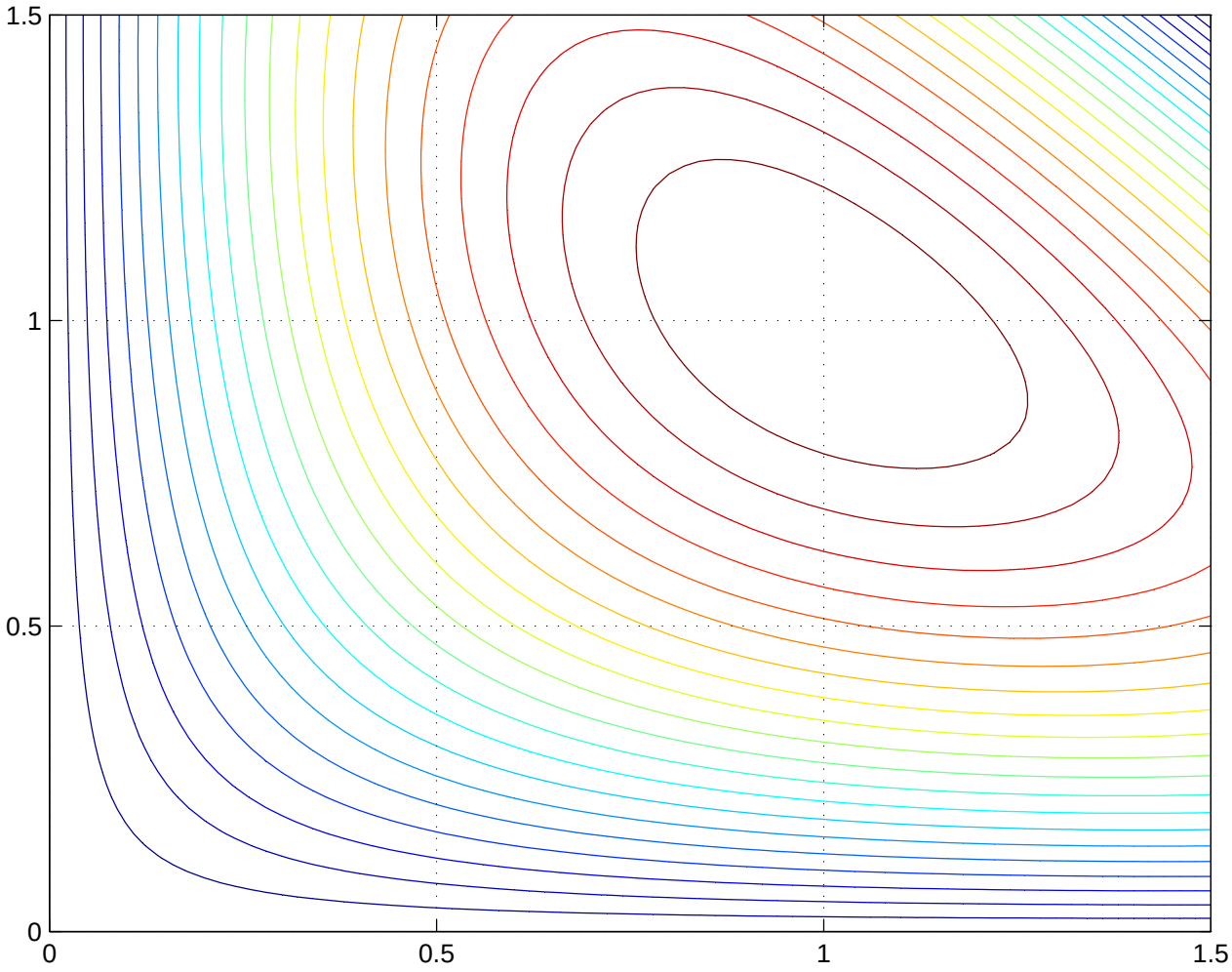
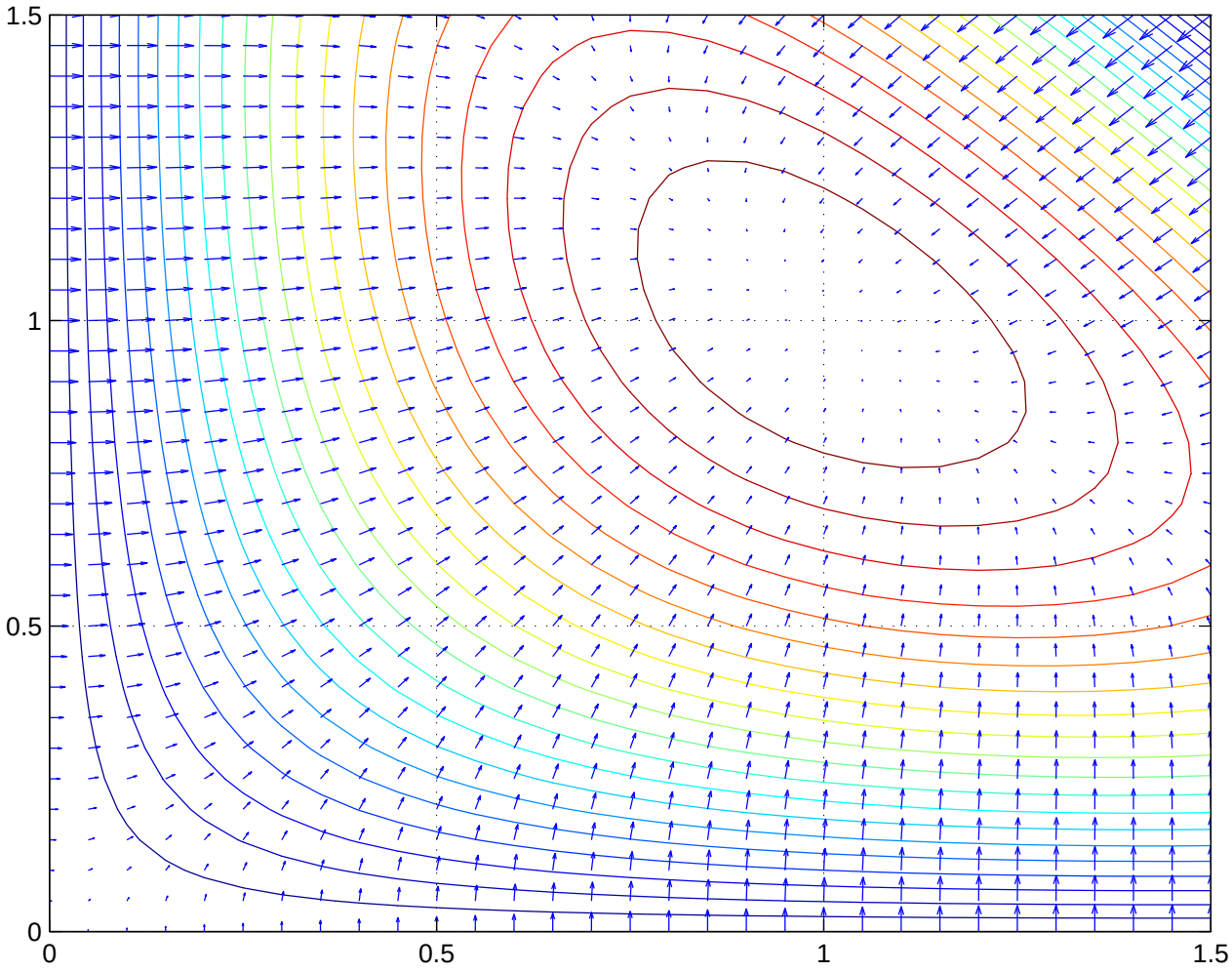
0
0.5
1
1.5
0
0.5
1
1.5


1.5
1
0.5
0
0
0.5
1
1.5


1.5
1
0.5
0
0
0.5
1
1.5