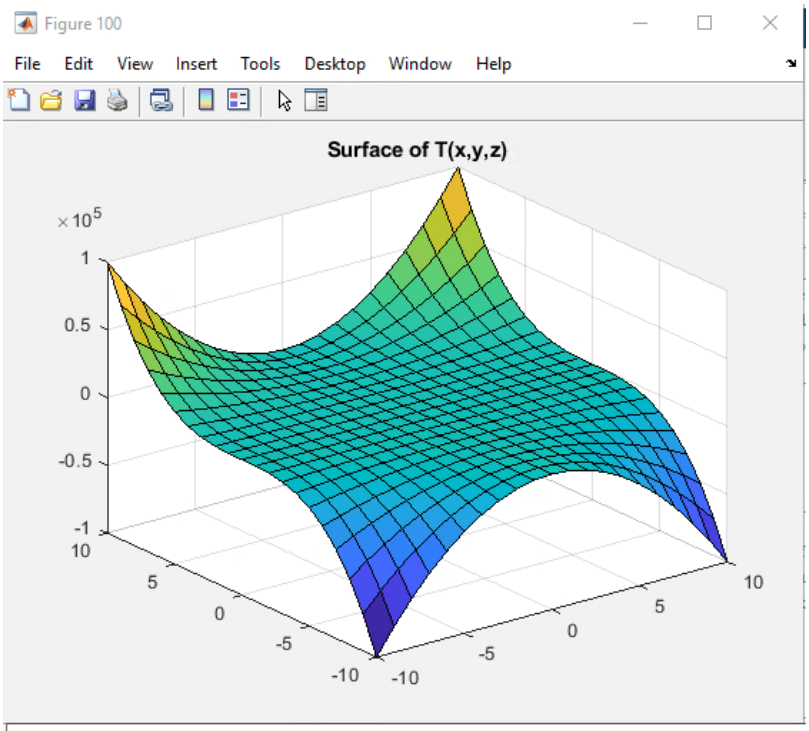
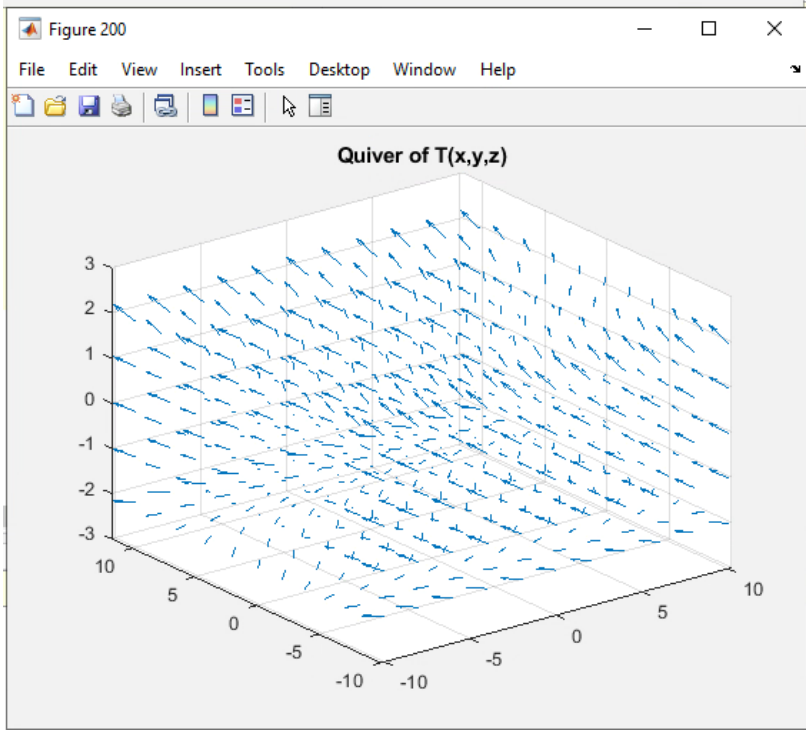
1. See attached PDF “GradDivCurl_Musil.pdf”
2. Starting with GradientEx1.m create "GradientEx2_LastName.m" and modify to implement problem 1 of the work sheet.

Results





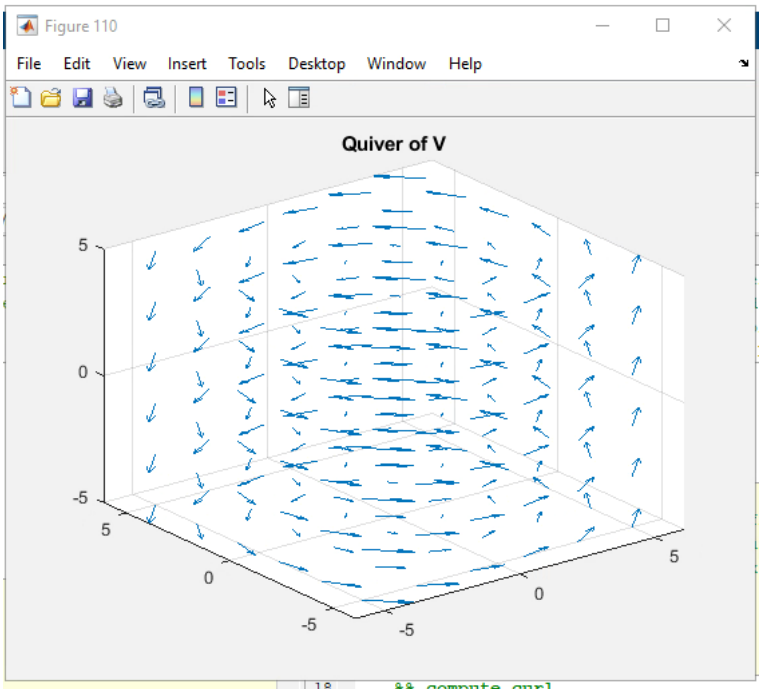
Code

GradientEx2_Musil.m

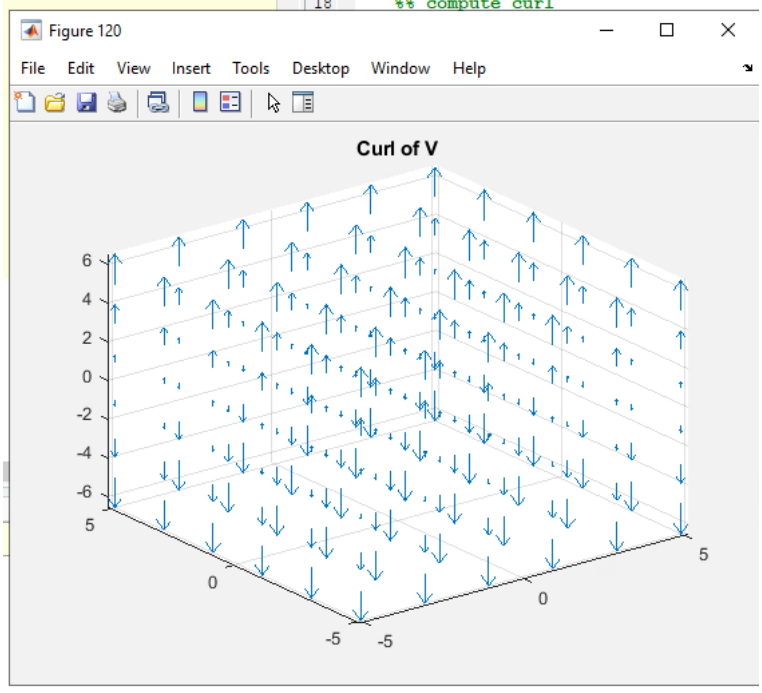
```
% C:\Curtis\EE5003\EE5003ModsSummer2015\Vectors
% Copyright (c) 2015 by OU AEC and Curtis Cohen
% 20150330 Jcc (Curtis Cohenour) original
clc, clear, close all, %close all hidden
%% plot T vs X Y with Z=0;
Xvc=(-10:10)';
Yvc=(-10:10)';
Zvc=1; % (-10:10)';
[X,Y,Z]=meshgrid(Xvc, Yvc, Zvc);
T=(X.^2).*(Y.^3).*(Z.^4);
figure(100)
surf(X,Y,T);
title('Surface of T(x,y,z)');
%% plot Gradient;
Xvc=(-10:2:10)';
Yvc=(-10:2:10)';
Zvc=(-2:1:2)';
[X,Y,Z]=meshgrid(Xvc, Yvc, Zvc);
T=(X.^2).*(Y.^3).*(Z.^4);
%Delt=[2*x+3*Y^2+4*z^3]';
DelX=2*X;
DelY=3*Y.^2;
DelZ=4*Z.^3;
figure(200)
quiver3(X,Y,Z,DelX,DelY,DelZ)
title('Quiver of T(x,y,z)');
grid on
```

3. Starting with CurlEx1.m create "CurlEx2_LastName.m" and modify to implement problem 3 of the work sheet.

Results




```
18  %% compute curl
```



Code

CurlEx2_Musil.m

```
% C:\Curtis\EE5003\EE5003ModsSummer2015\Vectors\CurlEx1m.m
% Copyright (c) 2015 by OU AEC and Curtis Cohenour (cohenour@ohio.ed
% 20150330 Jcc (Curtis Cohenour) original
clc, clear, close all, %close all hidden
%% set up mesh
Xvc=(-5:2:5)';
Yvc=(-5:2:5)';
Zvc=(-5:2:5)';
[X,Y,Z]=meshgrid(Xvc, Yvc, Zvc);
%% plot V
Vx=-Y;                  % Ex 1 Vx from curl video
Vy=X;             % Ex 1 Vy from curl video
Vz=zeros(6,6,6);              % Ex 1 Vz from curl video
figure(110)
quiver3(X, Y, Z, Vx, Vy, Vz);
title('Quiver of V');
grid on
%% compute curl
Crlx=zeros(6,6,6);
Crly=zeros(6,6,6);
Crlz=2*Z;
figure(120)
quiver3(X, Y, Z, Crlx, Crly, Crlz);
title('Curl of V');
grid on
tmp=0;
```