

Contour Plots¹

1. Enter the following commands:

```
[X,Y] = meshgrid(-1:.2:1);  
Z = X.^2 - Y.^2;  
contour(Z)
```

Notice the labeling of the axes. In order to fix this enter instead: `contour(X, Y, Z)`

2. Also try the following variations and report what happens:

```
contourf(X, Y, Z)  
contour(X, Y, Z, 10)  
contour(X, Y, Z, 20)  
contourf(X, Y, Z, 20)
```

What is the problem with the last couple of plots?

3. Now try the following alternative way to make contour plots:

```
syms x y  
ezcontour(x^2 - y^2)
```

4. Try both commands above to plot the level curves of $z = \sqrt{1 - x^2 - y^2}$.

Notice the squiggles in the curves near the edge. Should those be there? Can you find a way to improve this?

5. Write a brief report, using complete sentences and standard mathematical notation.

The goal of this project is to familiarize the user with the contour plot capabilities of the program. They should notice that the methods the program uses to produce the plots have limitations.

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