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Career Discovery
ETCS 105-M01
MatLab Project III
12/2/15

Two 150 Watt Bulbs

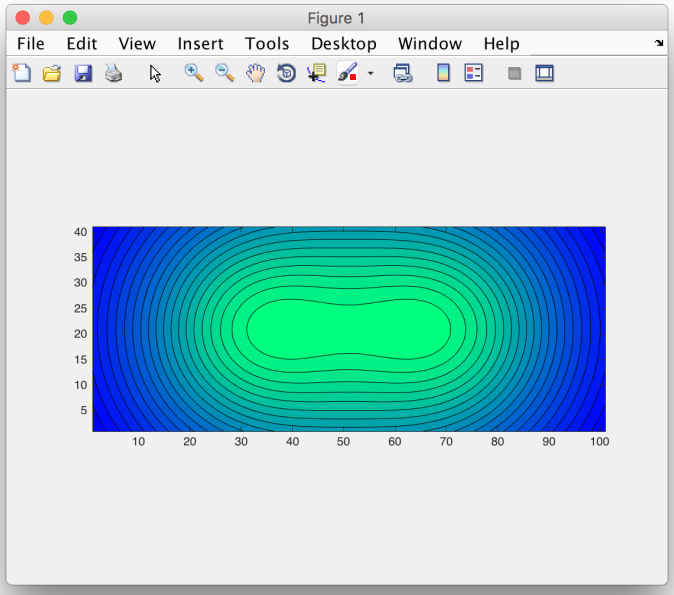
Define a function that gives the intensity of light at a point (x, y) on the floor due to a 150 watt bulb at a position (d, 2) on the ceiling:

```
two_lights = inline(vectorize('150/(4*pi*((x - d)^2 + (y - 2)^2 +
3^2))'), 'x', 'y', 'd')
```

```
two_lights =
     Inline function:
     light2(x,y,d) = 150./(4.*pi.*((x - d).^2 + (y - 2).^2 + 3.^2))
```

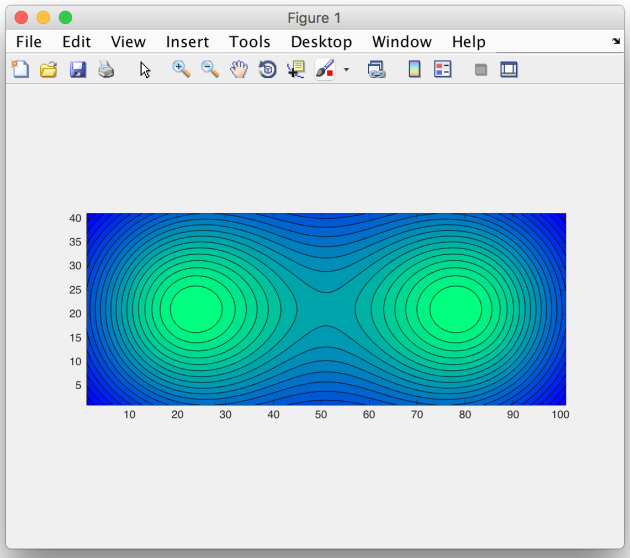
Let's get an idea of the illumination pattern if we put one light at d = 3 and the other at d = 7. We specify the drawing of 20 contours in this and the following plots.

```
[X,Y] = meshgrid(0:0.1:10, 0:0.1:4); contourf(two_lights(X, Y, 3) +
two_lights(X, Y, 7), 20); colormap('winter'); axis equal tight
```



Let's try changing the location of the lights to $d = 2$ and $d = 8$:

```
contourf(two_lights(X, Y, 2) + two_lights(X, Y, 8), 20);
colormap(winter); axis equal tight
```



Let's try lights at d = 1 and d = 9:

```
contourf(two_lights(X, Y, 1) + two_lights(X, Y, 9), 20);
colormap('winter'); axis equal tight
```