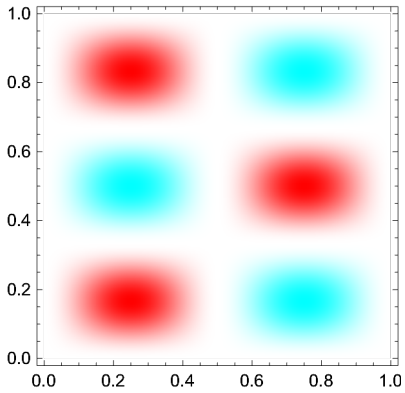
Plotting Two-Dimensional Wavefunctions

To plot the magnitude (or squared magnitude) of the wavefunction as color saturation and the phase as color hue, use RegionPlot[True...] and let the ColorFunction do all the work:

In[1]:=
```
psi[x_, y_] := Sin[2 Pi x] * Sin[3 Pi y];
RegionPlot[True, {x, 0, 1}, {y, 0, 1},
 PlotPoints -> 100,
 BoundaryStyle -> None,
 ColorFunction -> Function[{x, y}, Hue[Arg[psi[x, y]] / (2 Pi), Abs[psi[x, y]]^2, 1]]]
```

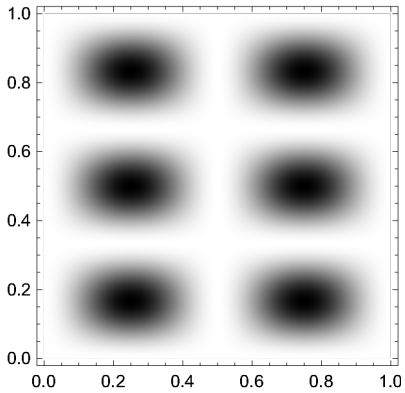
Out[1]=



To plot the probability density, use DensityPlot. Here you can try a whole variety of ColorFunction choices, but the simplest is a plain Blend from White to Black:

In[2]:=
```
DensityPlot[Abs[psi[x, y]]^2, {x, 0, 1}, {y, 0, 1},
 PlotPoints -> 100,
 ColorFunction -> Function[f, Blend[{White, Black}, f]]]
```

Out[2]=



In both cases you may want to try omitting the “^2” that squares the wavefunction. Sometimes you’ll want to multiply the wavefunction by a constant to effectively increase or decrease the “brightness”.