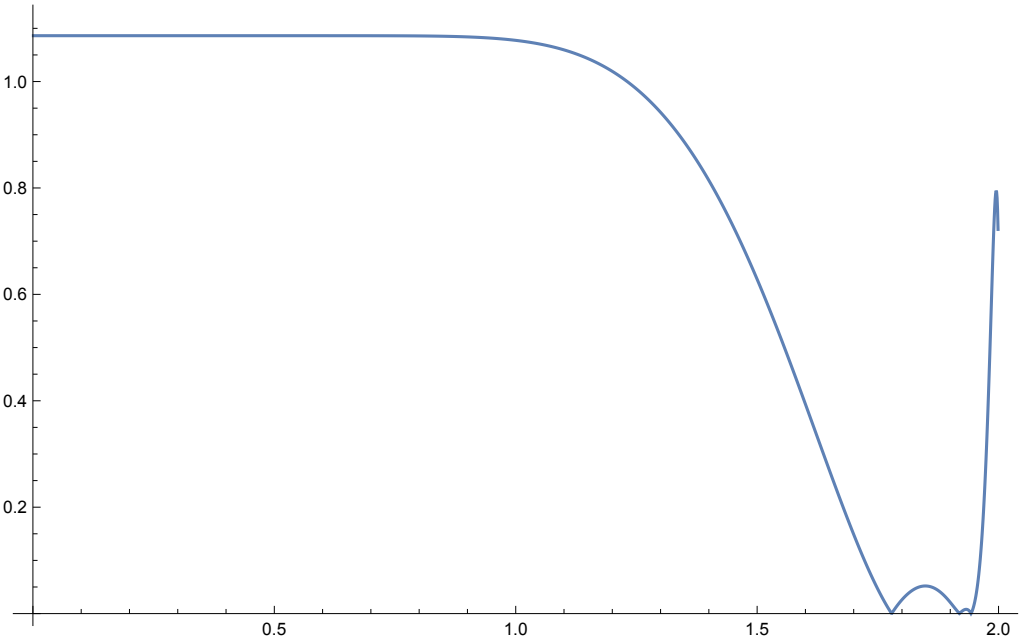
Homework 3 - PNS -- Aaron Miller 17322856

Graph of the error [Abs(phi(0.2,0.7, omega = 1.9, itterations = 1000) - phi(0.2,0.7, omega , itterations = 100)] vs omega ([0,2))

Out[27]=



The field converges to a derivative at dphi/dy (0.2,0.7) = -1.08617 (to 3 sig fig dphi/dy (0.2,0.7) = -1.09 . Using this, I found the error is minimised after 100 iterations by omega = 1.92 by using an if statement.

Here is a heat-map of how the field looks when the system converges.

Out[29]=