Problem 2)

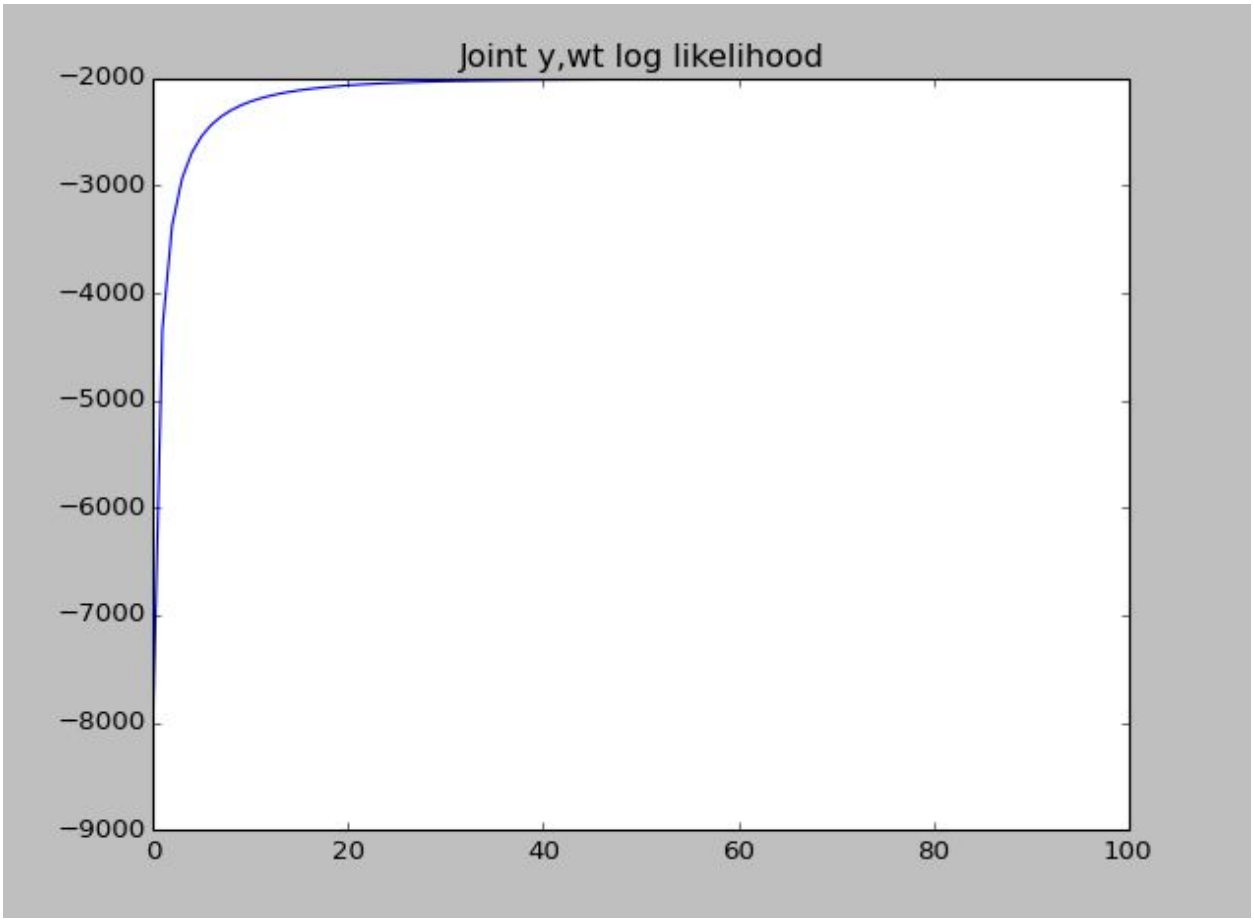
a)# Estep

p[y_1] = xw[y_1] + (sigma * norm.pdf(-xw_sigma[y_1]) / (1.0-norm.cdf(- xw_sigma[y_1])))

p[y_0] = xw[y_0] + (sigma * -norm.pdf(-xw_sigma[y_0]) / (norm.cdf(- xw_sigma[y_0])))

Main loop for E step

b)

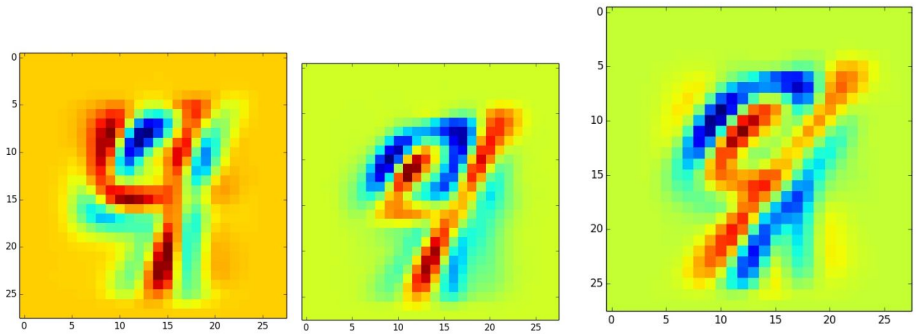


c)

```
Accuracy : 0.935208437971
1862/1991
Actual       0    1
Predicted
0          930   77
1           52  932
```

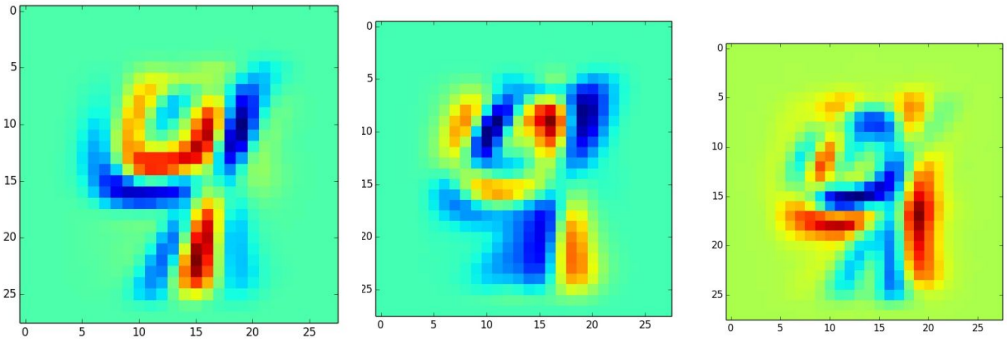
Where the 0 is a 4 and the 1 is a 9.

d)Printing Misclassified digits,
40,45, 64



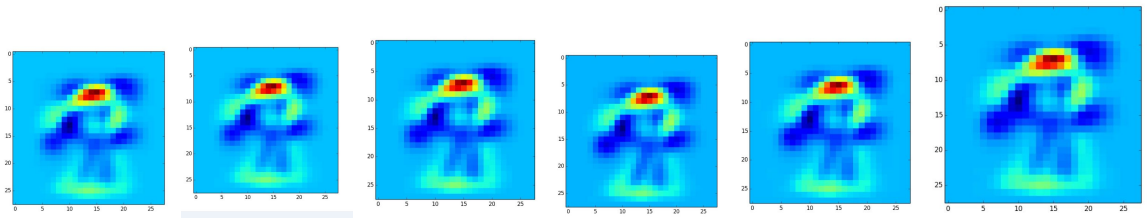
Predictive probability that
Is a 9 = 0.64 is a 9 = 0.78 is a 9 = 0.82
Actual =4 actual =4 actual =4

e) Most ambiguous predictions
1293, 676, 586



Probability = 0.5024 0.5064 0.50026

f) Yea I don't know if this one even works all the pictures look the damn same



W at 1 5 10 25 50 100
It's settling into something? Looks like the first few ones have a value of w that has some fluctuation. Anyways, I can't actually tell, because I'm pretty colorblind… they all look pretty much exactly the same