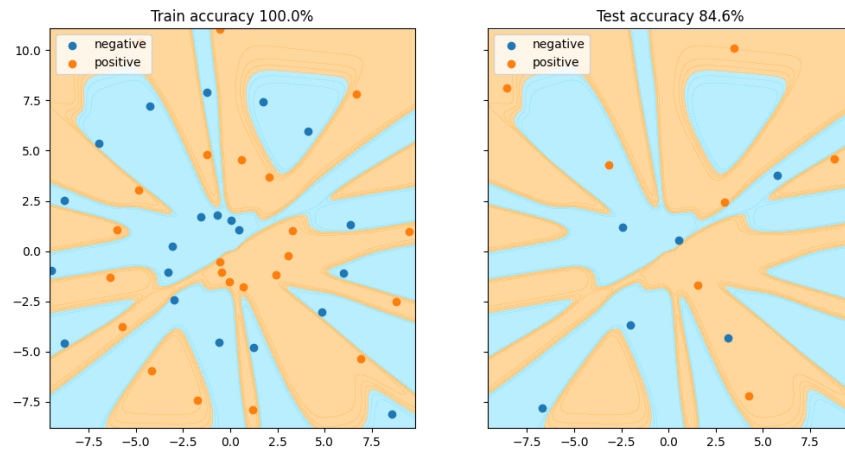


2. a. Could not get it working, but I would convert the Cartesian coordinates to polar coordinates. From there I would then I would plug the modified data into and compare the distance of the data to points from the spiral equation to make a classification.



b.

Figure 1: $N_iters = 10000$, $learning_rate = 1$, $\alpha = 1$, $penalty = "l2"$, layer dimension of 32

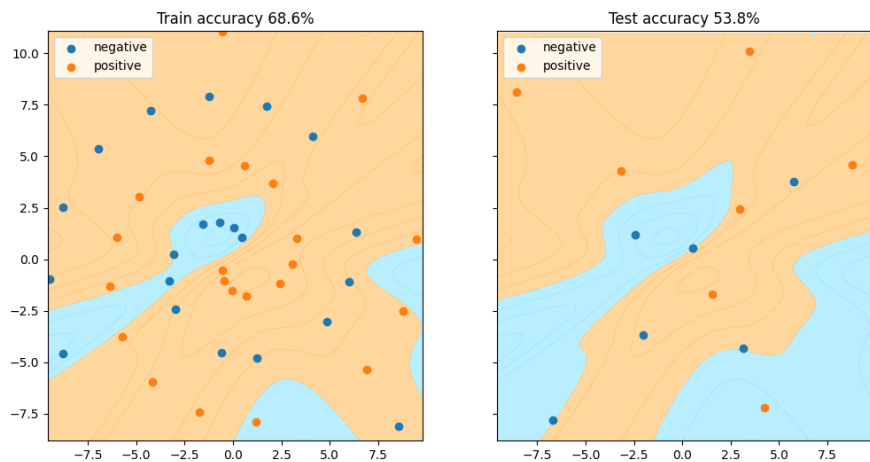
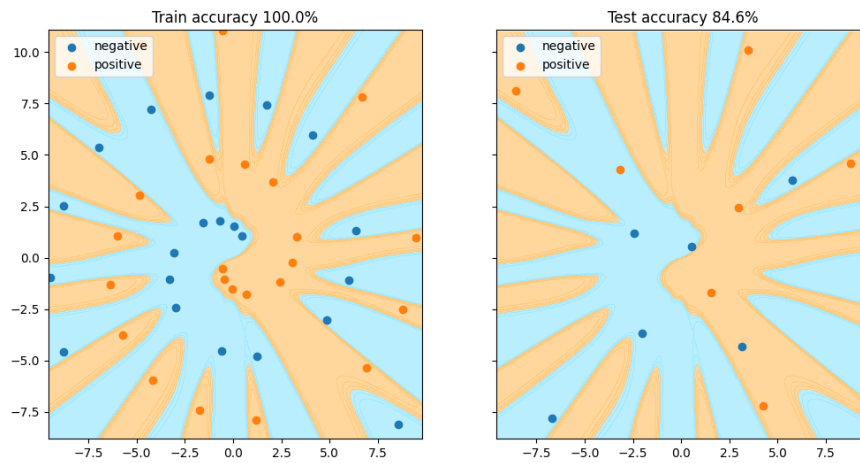


Figure 2: $N_iters = 200$, $learning_rate = 1$, $\alpha = 1$, $penalty = "l2"$, layer dimension of 32

Number of iteration, learning rate, had no effect. Penalty L2 was more accurate than L1. Alpha also effected the fit of the model with 1 being the most accurate fit.



c.

Figure 3: most accurate plot

$N_iters = 10000$, $learning_rate = 1$, $\alpha = 1$, $penalty = "l2"$, layer dimension of 128 were the hyperparameters of the most accurate plot that I could find. Alpha had the most effect on the accuracy of the test.