CONCLUSION

According to the data, the amount of moves needed for all the ant to reach the destination is 55. When we give the ants 55 moves, we let it make 3 random moves. After that, it starts following the ant with the most pheromone, or explore. Giving the ant 55 moves, we let them explore a little to find the best route, and then use each other to find and collectively reach the destination. If we give them more moves it would not make it any faster, since once an ant has reached its destination, it will not make any moves. We may not have the FASTEST way, but we have the practically fastest and effective way. Moving on to exploration, “0.45” was the best number of ants to explore. When the amount of ants was exploring was too low there was one huge problem. The ants could not find the BEST path available since very few of the ants were exploring. When I tested the ants at 75% and above, it was too much, and the ants were not making any LOGICAL moves; Just random moves. In conclusion, 55 moves with 25% exploring allows the ants to collectively reach the destination. Also, letting 45% of the ants explore, the ants can reach the destination within 25 to 43 moves. Previously I had my destination set as 0.1 (distance from zero). The ants successfully reached the destination. To see if it was truly optimized, I made the destination 0.01. This made the destination much harder to get to, but the ants were not stopped. Using each other, and a little more moves, the ants could successfully reach the destination.