

Training Set

| Feature 1 | Feature 2 | Label |
|-----------|-----------|-------|
| 9         | 5         | 1     |
| 7         | 1         | 1     |
| 8         | 2         | 1     |
| 7         | 3         | 2     |
| 9         | 4         | 2     |
| 3         | 3         | 2     |
| -1        | 1         | 3     |
| 1         | -2        | 3     |
| 2         | -1        | 3     |

Q1) Given the above training set, Use **K-Nearest Neighbor** with **Manhattan Distance** to classify the following test points:

| Feature 1 | Feature 2 | Label |
|-----------|-----------|-------|
| 8         | 3         | ?     |
| 1         | 2         | ?     |

- a) If  $K = 3$
- b) If  $K = 5$

Q2) List two real problems that you can use machine learning to solve and state what type of learning (Supervised, Unsupervised, and Reinforcement learning) do they need?