

Decision Trees Problem Set

Due date: 10/2/2019

Total Points: 10

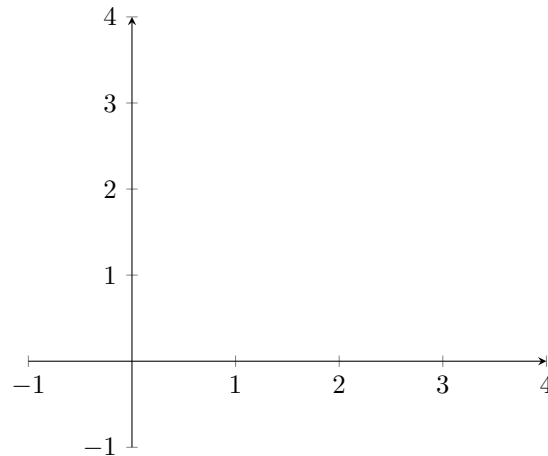
If you run out of room for an answer, use scratch paper and staple it to this sheet.

Name and Grade: _____

1. (2 points) Given the following data:

Graph the data with the horizontal axis being x_1 and the vertical axis x_2 . Draw the line that corresponds to the decision that maximizes information gain. Shade in points that correspond to $y = 0$ and leave hollow the ones that correspond to $y = 1$.

x_1	x_2	y
1	0	0
1	1	0
1	2	1
2	2	1
3	3	0
3	1	1
3	2	1



2. (4 points) Calculate the information gain for the above decision using the Gini Impurity Measure.

3. (2 points) Draw out a 2 layer deep decision tree that using the data in Question 1.

4. (2 points) What is the maximum and minimum possible information gain of a decision?