

NAME: \_\_\_\_\_ Score \_\_\_\_\_/10

Please **print** your name**SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION****Consider the inequality  $5x - 7y > -35$ . All questions relate to this inequality**

1. The boundary line for this inequality is  $5x - 7y = -35$ .
2. The x-intercept of the boundary line is  $(-7, 0)$ .
3. The y-intercept of the boundary line is  $(0, 5)$ .
4. The other inequality which is under consideration is  $5x - 7y < -35$ .
5. Is it possible for a point on the boundary line to be a solution for the original inequality? (YES **NO**).
6. The boundary line divides the plane into three sets:
  - a. the boundary line, (Call this set A)
  - b. the half-plane **containing** the origin, (Call this set B) and
  - c. the half-plane **not containing** the origin . (Call this set C)
7. If a point in set B is a solution to  $5x - 7y > -35$  then B is the **solution set** for  $5x - 7y > -35$
8. If a point in set C is a solution to  $5x - 7y > -35$  then C is the **solution set** for  $5x - 7y > -35$
9. If a point in set B is NOT a solution to  $5x - 7y > -35$  then B is the solution set for  $5x - 7y < -35$
10. If a point in set C is NOT a solution to  $5x - 7y > -35$  then C is the solution set for  $5x - 7y < -35$
11. If the origin is tested in  $5x - 7y > -35$  we obtain  $0 > -35$  which is **false**.
12. The set A is the solution set for  $5x - 7y = -35$
13. The set B is the solution set for  $5x - 7y < -35$
14. The set C is the solution set for  $5x - 7y > -35$
15. For the three sets A, B, and C the following are true:
  - a.  $A \cup B \cup C =$  **The Plane**
  - b.  $A \cap B = \emptyset$
  - c.  $A \cap C = \emptyset$
  - d.  $B \cap C = \emptyset$
  - e. The above are true because of the **Law of Trichotomy**