

NAME: \_\_\_\_\_ Score \_\_\_\_\_/20

Please **print** your name

1. The definitions used in mathematics are **stipulative** definitions.
2. What is the solution set for  $|3x - 8| > -5$  ? **R**.
3. Write the set  $\{x|3 < x \leq 7\}$  using interval notation. **(3,7]**.
4. Write  $|3x - 7| < 4$  as a compound compact inequality  **$-4 < 3x - 7 < 4$** .
5. (4 pts) Complete the following definition of absolute value.

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$

6. When considering an equation and the two corresponding inequalities we realize the graph of the equation forms a **boundary** between the graphs of the two inequalities.
7. (3 pts) Suppose  $k$  is a positive number and the solution set to an inequality of the form  $|ax + b| < k$  is the interval  $(8, 12)$ . **Use the roster method or interval notation as indicated.**
  - a. What is the solution set for the equation  $|ax + b| = k$ ? **{8, 12}** (roster)
  - b. What is the solution set for the inequality  $|ax + b| > k$ ?  **$(-\infty, 8) \cup (12, \infty)$**  (interval)
  - c. What is the solution set for the inequality  $|ax + b| \geq k$ ?  **$(-\infty, 8] \cup [12, \infty)$**  (interval)
8. Complete the following:  
**Law of Trichotomy:** If  $a$  and  $b$  are real numbers, then one and only one of the following is true:
  1.  **$a < b$**
  2.  **$a = b$**
  3.  **$a > b$**
9. Which of the following are linear equations in one variable?
  - a.  $3x + 2$
  - b.  $x = 3$**
  - c.  $x^2 + 5 = 0$
  - d.  $y = 3x + 2$
  - e.  $3x + 5 = 2x - 9$**