

# Meramec Intermediate Algebra Chapter 3 TEST 3

Summer 2010

NAME: \_\_\_\_\_ Score \_\_\_\_\_ /100

Please print

SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION

Course Average \_\_\_\_\_

**No Decimals No mixed numbers No complex fractions No boxed or circled answers**

**Questions 1 – 25 are 2 pts each.**

1. T F In the rectangular coordinate system (Cartesian coordinate system) the horizontal number line is usually called the x-axis.
2. T F Each ordered pair of real numbers can correspond to two points in the Cartesian coordinate system.
3. T F Graphs of Equations and Inequalities in two variables appear on the Real Number Line.
4. T F If both sides of an equation are multiplied by any expression, the resulting equation is equivalent to the original equation.
5. T F To graph a linear equation in two variables it is only necessary to plot two points on the graph and draw the line through those points.
6. T F A horizontal line has no slope. **Be careful. Think.**
7. T F The graph of every linear equation in two variables is a non-vertical line.
8. T F If any expression is added to both sides of an inequality the resulting inequality is equivalent to the original inequality.
9. T F The second coordinate of a point in Quadrant II is positive.
10. T F The graph of every linear inequality in two variables is a non-vertical line.
11. In the rectangular coordinate system (Cartesian coordinate system) the point of intersection of the two number lines is called the \_\_\_\_\_ of the coordinate system
12. An ordered pair  $(x, y)$  of real numbers is a \_\_\_\_\_ of an equation in two variables if the coordinates satisfy the equation.
13. If any expression is added to both sides of an equation the resulting equation is \_\_\_\_\_ to the original equation.
14. Pythagorean Theorem: If  $a$  and  $b$  are the lengths of the legs of a right triangle with hypotenuse of length  $c$ , then \_\_\_\_\_.
15. A point is on the x-axis if and only if its \_\_\_\_\_ coordinate is zero.
16. If both sides of an inequality are multiplied by the same negative real number and the inequality symbol is \_\_\_\_\_, the resulting inequality is \_\_\_\_\_ to the original inequality.
17. A linear equation in two variables is an equation that can be written in the form \_\_\_\_\_ where  $m$  and  $b$  are real numbers.

18. If the inequality symbol in an inequality in two variables is replaced with an equality symbol, the graph of the resulting equation is called the \_\_\_\_\_ curve for the inequality.

19. Two non-vertical lines are \_\_\_\_\_ if they have the same slope and different y-intercepts.

20. A solution of an equation in two variables is an \_\_\_\_\_ of Real Numbers.

**WARNING: Especially for Questions 21 – 25, it is essential that you remember a formula must contain an = symbol.**

21. The midpoint of the line segment joining two points  $(x_1, y_1)$  and  $(x_2, y_2)$  is given by the formula:

22. The distance  $d$  between two points  $(x_1, y_1)$  and  $(x_2, y_2)$  is given by the formula:

23. The equation of a circle with radius  $r$  and center at the origin is:

24. The slope of the line through two points  $(x_1, y_1)$  and  $(x_2, y_2)$  is given by the formula:

25. The point-slope form of the equation of a line is:

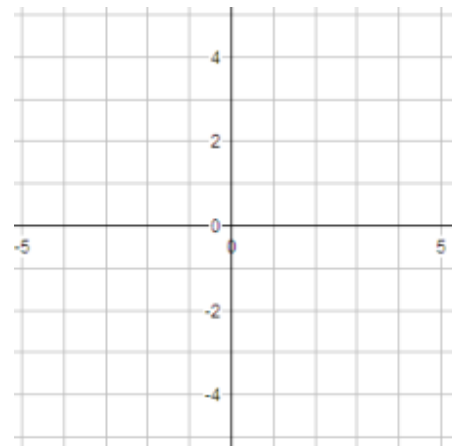
**Questions 26 – 35 are 5 pts. each.**

26. Write the equation of the circle with center at  $(3, -5)$  which has radius 4.

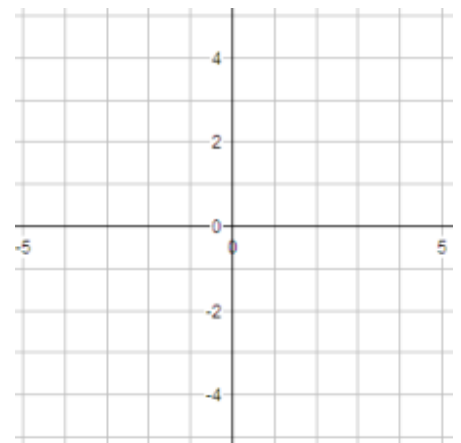
27. Write the equation, in slope-intercept form, of the line with slope  $\frac{2}{5}$  and y-intercept  $\sqrt{3}$ .

28. Write the equation  $y - 5 = \frac{3}{8}(x + 1)$  in slope-intercept form. **Show the steps**

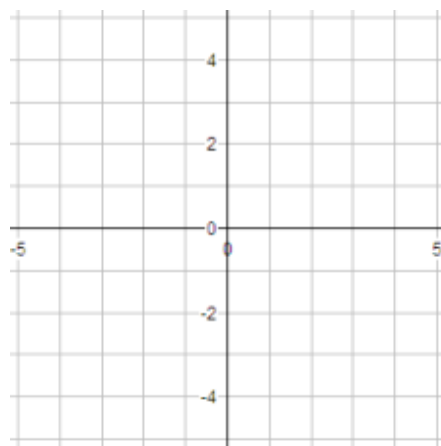
29. Sketch the graph of  $3x - 2y = 9$ . **Show your calculations. Label x and y intercepts with their coordinates.**



30. Sketch the graph of  $(x + 1)^2 + (y - 2)^2 = 9$ . **Label (with coordinates) the points at the ends of the vertical and horizontal diameters. Label (with coordinates) the center of the circle.**



31. Sketch the graph of  $x^2 + y^2 = 4$ . **Label x and y intercepts with their coordinates. Label the center of the circle with its coordinates.**



32. What is the slope of the line whose equation is  $5x - 8y = 11$ . **Show your work.**

33. Find the equation of the line through  $(-3, 1)$  with slope 5. Write the equation in slope-intercept form. **Show your work. If you are going to use a formula, state the formula, then use it.**

34. Find the equation of the line through  $(2,3)$  and  $(5,5)$ . **Show your work. If you are going to use a formula, state the formula, then use it. Write the equation in slope-intercept form.**

35. Consider the inequality  $3x - 2y > 18$ .

a. What is its boundary equation? \_\_\_\_\_

b. Should its graph be dashed or solid? \_\_\_\_\_

c. Sketch the graph of the boundary equation. **Show your calculations. Label x and y intercepts with their coordinate.**

d. Choose a test point \_\_\_\_\_

e. Test your test point in  $3x - 2y > 18$ .

f. Do you get a true statement or a false statement? \_\_\_\_\_

g. Shade the graph of the inequality  $3x - 2y > 18$ .

