Homework: http://math.mnrt.net/

Name _____Date_____ _____ raw _____ percent

Math 10 Trimester 3 Exam 2 (140 Points)

Coordinate Geometry. Circle

■ **This is a take home exam. Here are the rules:**

The exam is due at the start of class on Monday, April 16, 2012.

You may
[1] use your book, your notes, and a calculator while doing the exam,
[2] use any other book while doing the exam,
[3] use the internet to learn more about these topics while doing the exam,
[4] discuss the questions with a classmate or with anyone else who is *not* at a higher level of mathematics than you are. The solutions turned in must be your own work.

■ **Any questions about these rules, just ask me at any time. If you believe there is an error in a question, ask me about it.**

■ **Please work out your solutions as rough drafts on paper other than this exam paper. When you turn in this exam (on this paper) it should be your final draft of your best work. If I must exercise more than ordinary effort to figure out what you are saying, either because your penmanship or mathematical exposition is unclear, you will not receive full credit.**

■ **Partial credit is given. It is to your advantage to write clear, complete, and concise solutions. Show as much detail as would be needed for a good student at your level to understand your work.**

■ **Calculators are allowed, but only exact answers count. If the answer is $\sqrt{2}$, then $\sqrt{2}$ gets credit and a decimal approximation such as** 1.4142135623730950488 **gets no credit.**

■ **Answers must be completely simplified. No denominators may include radical or complex numbers. All fractions reduced. Simple arithmetic must be completely performed; e.g. write 9 instead of $\sqrt{81}$ and $i\sqrt{7}$ instead of $\sqrt{-7}$.**

■ **Part of the reason for a take home exam is to provide the student sufficient time to think over each solution. It is not intended to be merely an in-class exam that you happen to do at home. This means that there is no reason to complete the whole exam in one sitting.**

■ **A. Answer the following. (20 points each).**

[1] Find the range of values of a if the line $a\,x + y + 1 = 0$ and the circle $x^2 + y^2 + 4\,x + 3 = 0$ have *at least* one point in common.

[2] Write the equation in center-radius form of a circle centered at $C(-5, 8)$ radius 6.

[3] Find the equation of the line tangent to the circle $x^2 + y^2 = 25$ at the point (3, 4) on the circle.

[4] Find the equations of the lines through (0, 2) that are tangent to the circle $x^2 + y^2 = 1$.

[5] Find the center and the radius of the circle with equation $x^2 - 4x + y^2 + 6y - 3 = 0$

[6] Find all values of n for which the line $y = x + n$ is tangent to the circle $x^2 + y^2 = 1$

[7] Find the slope of a straight line through the point (2, 0), if the length of a chord cut from this line by the circle $x^2 + y^2 = 1$ is 1.