Practice Test 1

MAT 121-G11

SI Leader: Lincoln Engelhard

Instructor: Steve Mills

Fall 2010

      Work these problems in full. Show your work. I suggest writing down EVERY equation you use before you plug your numbers in. This should help you remember the formulas. If you get stuck on a problem, move on to another problem, or start writing down everything you know about the problem. Sometimes you will write something down that will give you insight to what the next step is. Have a good test!

Solve the equations. State whether the equations are identities, conditional or inconsistent equations.

1)   2)

3)   –   –   –   –   4) ——

5)   Determine the midpoint of the line between the points P(1, 3), P(4, 7).

6) Find the distance between the two points in problem 5.

7)   Find the center and radius of the circle and sketch the graph.

8) a) Sketch a graph of the linear equation then put the equation in STANDARD form. Be sure
        to clearly show and label both intercepts.

b) Find the equation of the line that passes through the points (-3, 4), (5, 6). Sketch the graph. Show and label both intercepts. Write your equation in both point-slope form and in slope-intercept form.

c) find the equation of a line that is perpendicular to the line in part b. (hint: use point-slope form)

9) Compute the discriminant for the following equations and state how many solutions there will be and whether they are real or not real.

a)

b)

c)

10) Solve the equation _____ by

    a) completing the square

    b) using the quadratic formula.

11) Solve by factoring.

12) Solve the following inequalities. Put your answer in both set-builder and interval notation.

    a) ⎯⎯

    b) ⎯⎯

13) Write as a single interval.

   a)

   b)

14) Solve the compound inequality. Give your answer in both set-builder and interval notation.

   _

15) How many liters of a 15% alcohol solution and how may liters of a 10% alcohol solution should be mixed together to obtain 15 liters of a 14% alcohol solution?

16) George can paint a house in 8 hours working alone. Bill can do the same job alone in 12 hours. If Bill starts painting at 8 A.M. and George joins him at 10 A.M., then at what time will they have the entire house painted?

EXTRA) Derive the quadratic formula from the standard form of a quadratic equation given as

Note: you will probably definitely not see this on the test, but if you can do this, then you should have a very good understanding of what is going on with quadratic equations!