Name: _____

The following are roughly the instructions for the real exam.

- **READ THE FOLLOWING DIRECTIONS!**
- **Do NOT open the exam until instructed to do so.**
- You have two hours to complete this exam. When you are told to stop writing, do it or you will lose all points on the page(s) you write on.
- You may not communicate with other students during this test.
- Keep your eyes on your own paper.
- No written materials of any kind are allowed. No scratch paper is allowed except as given by the proctor.
- No phones, calculators, or any other electronic devices are allowed for any reason, including checking the time (a simple wristwatch is fine).
- Any case of cheating will be taken extremely seriously.
- Show all your work and explain your answers when appropriate.
- Before turning in your exam, check to make certain you've answered all the questions.

1. Determine if the following points lie in the first, second, third, or fourth quadrant, or in the x-axis or y-axis.
   (a) $(3, 5)$
   (b) $(6, 0)$
   (c) $(0, -12)$
   (d) $(-3, -4)$

2. Find the midpoint of the following pairs of points.
   (a) $(4, 6)$ and $(-2, 4)$
   (b) $(-3, 12)$ and $(13, -4)$

3. Determine the distance between the following pairs of points.
   (a) The origin and $(4, 3)$.
   (b) $(4, 5)$ and $(12, 13)$
   (c) $(-3, -2)$ and $(2, 10)$
   (d) $(3, 4)$ and $(-2, 6)$
   (e) $(-1, -12)$ and $(11, 7)$

4. Determine what are the x-intercepts and the y-intercepts of the following equations. Then make a table with at least 5 points in the graph of the equation.

   (a) $|y-3| = x+4$

   (b) $4 - 4x^2 = y$

   (c) $xy = 1$

   (d) $(y-2)^2 = x-1$

   (e) $x^2 + y^2 = 1$

5. Determine the slope of the line that goes through the following pairs of points.

   (a) $(6, 2)$ and $(4, 3)$

   (b) $(-2, -6)$ and $(-12, 7)$

   (c) $(-5, 4)$ and $(6, -2)$

   (d) $(9, 4)$ and $(9, -12)$

   (e) $(6, -3)$ and $(-8, -3)$

   (f) $(6, 6)$ and $(-12, -12)$

6. Determine whether the following pairs of lines are parallel, perpendicular, or neither.

   (a) The line given by $2x - 3 = y$, and the line that goes through $(6, 2)$ and $(4, 3)$.

   (b) The line through $(9, 4)$ and $(9, -12)$, and the line given by $y = 6$.

   (c) The lines given by $6x + 6y = 13$, and $5(x - 3) = y - 9$

   (d) The line through $(-5, 4)$ and $(6, -2)$, and the line through $(0, 4)$ and $(11, -2)$.

   (e) The line given by $x = y$ and the line through the point $(0, 2)$ with slope 1.

7. Write the following equations in standard form and graph them.

   (a) $2x = y + 6$

   (b) $2(x - 1) = 3 + y$

   (c) $x + 10 = 2x - 5$

   (d) $3(x + y) = -2y + 6$

8. Solve the following inequalities, write the solution in interval form and give a graphical representation.

   (a) $3(x+2) \leq 2x - 5$

   (b) $6 < 2x + 4 \leq 12$

   (c) $-5x + 4 < -16$

(d) $-2x + 5 < x + 2 \leq -2x + 29$

(e) $-3(x + 5) < 2x$

(f) $x^2 < 0$

9. Solve the following quadratic equations by factoring.

(a) $x^2 + 4x - 21 = 0$

(b) $x^2 + x = x + 1$

(c) $4x^2 + 8x + 5 = 2$

10. Solve the following equations by the method of your choice.

(a) $2x^3 + x^2 = 3x$

(b) $(x + 3)^2 = 36$

(c) $3x^2 + 12x + 3 = 0$

11. for each equation determine the number of solutions. **HINT: you don't have to solve**

(a) $x^2 - 2 = 0$

(b) $x^2 + 1 = 0$

(c) $2x^2 + x + 1 = 0$

(d) $x^2 - 2x + 1 = 0$

(e) $-x^2 + 3x - 5 = 0$