1. (6pts)   Write the equations of the vertical and horizontal lines that pass through the point $(3, -2)$. Draw a picture.

2. (6pts)   Are the lines $2x - 3y = 5$ and $y = -\dfrac{2}{3}x + 6$ parallel? Explain.

3. (5pts)   Solve the equation.

$|2x + 5| = 11$

4. (14pts)   Solve the inequalities and write the solution using interval notation:

$4 - 3x > 7$ $\hspace{8em}$ $|3x - 10| \geq 6$

5. (15pts) Solve the equations.

$2x^2 - x + 3 = 5 - 4x^2$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad x - 3 = \sqrt{33 - 8x}$

6. (10pts) Below is an equation of a circle. Find the center and radius of the circle and draw the circle.

$x^2 + y^2 + 8x + 12y - 12 = 0$

7. (10pts) Use your calculator to accurately sketch the graph of $y = -x^3 + 3x^2 + 7x + 4$. Draw the graph here, and indicate the viewing window. Find all the $x-$ and $y-$intercepts (accuracy: 4 decimal points).

8. (20pts) Let $A = (4, -1)$, $B = (1, 10)$ and $C = (-1, 0)$.
a) Draw these points in the coordinate system.
b) Show algebraically that the triangle ABC is a right triangle.
c) Find the equation of the line that passes through C and is perpendicular to the side AB.
d) Draw the line in the picture.

9. (14pts) Wilma has a rectangular picture whose area is 15 square feet. What are the dimensions of the picture if the width is 3 feet more than the height?

Bonus (10pts) Find the equation of the set of all points in the plane that have equal distance to $(-3, 2)$ and $(5, -4)$. Draw the picture. You should get a line perpendicular to the line between the two points. *(Hint: Set up an equation involving the distance between a generic point (x, y) and the two points. Then simplify the equation until you get the equation of a line.)*