Math 12
Vogler
Worksheet 1

1.) Determine the center and the radius for the circle $(x-3)^2+(y-1)^2=25$. Also, find the y-coordinates of the points (if any) where the circle intersects the y-axis.

2.) Consider the following circle $(x-4)^2+(y-1)^2=9$. Solve the equation for y, and then graph the resulting semicircles (i.e. the top/bottom half) on separate graphs.

3.) Determine the equation of the circle that satisfies the given condition, and write the equation in standard form. Condition: The circle passes through the origin and is concentric with the circle $x^2-6x+y^2-4y+4=0$.

4.) Determine the equation of the circle that satisfies the given condition, and write the equation in standard form. Condition: The circle passes through $(-4,1)$ and its center is the midpoint of the line segment joining the centers of the two circles
$x^2+y^2-6x-4y+12=0$ and $x^2+y^2-14x+47=0$.

5.) Find a value for t such that points $(0,2)$ and $(12,t)$ are 13 units apart. HINT: Use the distance formula, and solve for t.

NOTE: For the next two problems, you need to know how to build an equation of a line from Section 1.6.

6.) Find an equation for the line that satisfies the given condition, and sketch the graph, making sure to label the x- and y-intercepts. Write the final answer in the form $y=mx+b$. Condition: Has the same x- and y-intercepts as the circle $x^2+y^2+4x-4y+4=0$.

7.) Find an equation for the line that satisfies the given condition, and sketch the graph, making sure to label the x- and y-intercepts. Write the final answer in the form $Ax+By+C=0$. Condition: Passes through $(3,-5)$ and through the center of the circle $4x^2+8x+4y^2-24y+15=0$.