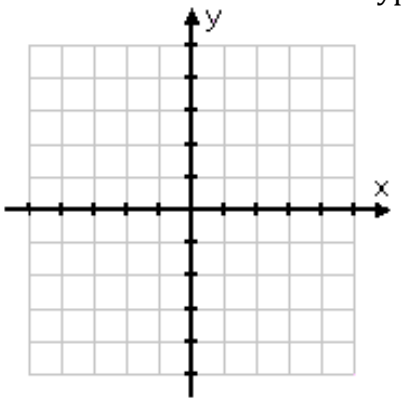
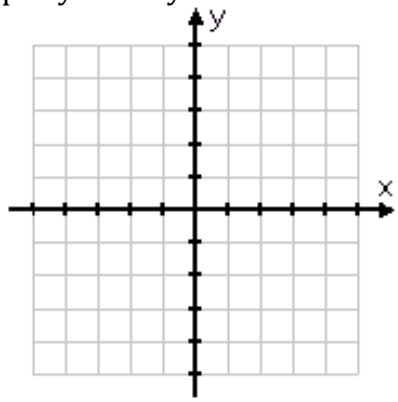
Symmetry and Even/Odd Functions

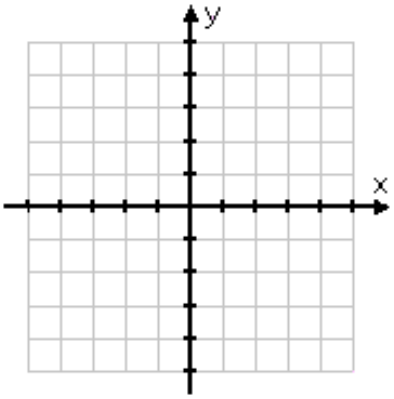
There are three different types of graph symmetry:



y-axis symmetry
EVEN function



origin symmetry
ODD function



x-axis symmetry
NEITHER even nor odd

- A function is **even** if the function is symmetric about the y-axis;
  this means $f(-x)=f(x)$
- A function is **odd** if the function is symmetric about the origin;
  this means $f(-x)=-f(x)$
- To find out whether the function is even or odd, substitute "-x" for "x" and simplify the function.
  - If it is the SAME as the original, it is even.
  - If it is the OPPOSITE of the original, it is odd

Decide if the following functions are even, odd or neither algebraically:

a) $y = x^4 - x^2 + 3$

b) $xy = 4$

c) $x - y^2 = 0$

d) $g(x)=x^3-x$

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

Circles - Standard Form of the Equation of a Circle

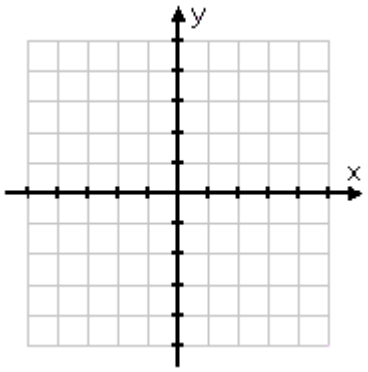
The point (x,y) lies on the circle of radius r and center (h,k) if and only if;

$$(x - h)^2 + (y - k)^2 = r^2$$

Ex. 1: $x^2 + y^2 = r^2$ is a circle with its center at the _____

Ex. 2: If h = 3, k = -2 and r = 4, give the equation of the circle

And graph the circle:



Ex. 3: The point (3,4) lies on a circle whose center is at (-1,2).
Write the standard form of the equation of this circle.

Ex. 4: If the diameter of a circle has two endpoints of (-4,-1) and (4,1)
write the equation of the circle

Suggested homework problems:

The following are problems from sections 1.2 and 1.5 that would be great for some extra practice on these sections. All the answers should be in the back of the book, and if you have any questions I am happy to answer them in class.

p. 22-24 #7, 13-19odd, 25-31odd, 57, 59, 62, 63, 65, 68, 69
p. 61-63 #'s 1-4, 9, 11, 13, 15, 17, 19, 23, 24, 31-33, 35, 37, 49, 53, 55, 58, 71, 72, 75