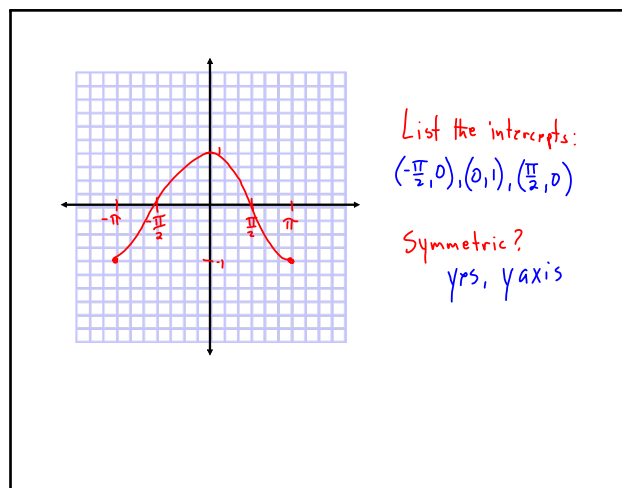
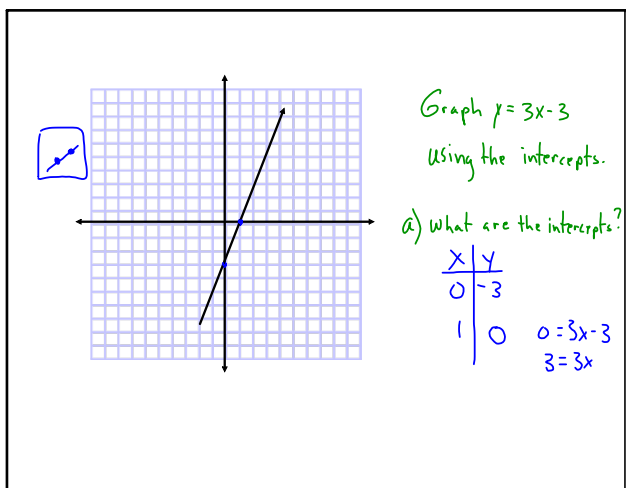


$$y^2 = x^2 + 25$$

Is (0,5) on the graph?

$$5^2 = 0^2 + 25$$

$$25 = 25 \quad y=5$$



-x test:

No Signs change  $\Rightarrow$  Symmetric to y-axis

All signs change  $\Rightarrow$  origin

①  $f(x) = 2x^2 + 5x$  Neither  
 $2(-x)^2 + 5(-x)$   
 $2x^2 - 5x$

②  $f(x) = 3x^4 - 7x^2$  No signs changed  
 $3(-x)^4 - 7(-x)^2$  y-axis (Even)  
 $3x^4 - 7x^2$

$f(x) = x^3 - x$  All signs changed  
 $(-x)^3 - (-x)$  Origin (odd)  
 $-x^3 + x$

$y = x^3$

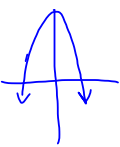
$$y^2 = x + 16$$

Intercepts?  $(0, -4), (0, 4), (-16, 0)$

X	Y
0	4; -4
-16	0

Sketch

Symmetry?  $y^2 = -x + 16$  Not Symmetric to Origin or y-axis  
Symmetric to x-axis

$y = -x^2 + 49$       Intercepts?
   

  
 $(0, 49), (7, 0), (-7, 0)$ 
  
  
 Symmetry?
   
 $y = -(x)^2 + 49$     y-axis
   
 $-x^2 + 49$

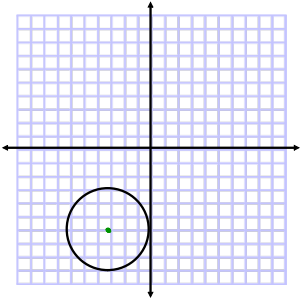
2.4 Circles

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

$(h, k)$  center  
 $r$  - radius

General  $Ax^2 + Bx + c + Dy^2 + Ey + F = 0$

$(x-2)^2 + y^2 = 4$   
 Center?    radius?


  
 Center?
   
 $(-3, -6)$ 
  
 radius?
   
 $3$ 
  
 Equation:
   
 $(x+3)^2 + (y+6)^2 = 9$

Complete the square:

$\left(\frac{b}{a}\right)^2$        $a^2x^2 + \frac{b}{2}x + \frac{c}{4}$ 
  
 $(x+3)^2$

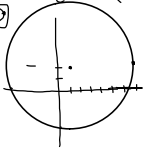
Find the center and radius then graph it. Also find the intercepts.

$x^2 + y^2 - 2x - 4y - 31 = 0$

$x^2 - 2x + \frac{1}{4} + y^2 - 4y + \frac{4}{4} = 31 + 1 + 4$

$(x-1)^2 + (y-2)^2 = 36$

center  $(1, 2)$     radius = 6


  
 Intercepts:
 

x	y
0	$2 - \sqrt{35}$
0	$2 + \sqrt{35}$
$1 + \sqrt{36}$	0
$1 - \sqrt{36}$	0

  
 $1 + (y-2)^2 = 36$   
 $(y-2)^2 = 35$   
 $y-2 = \pm\sqrt{35}$   
 $y = 2 \pm \sqrt{35}$ 
  
 $(x-1)^2 + 4 = 36$   
 $(x-1)^2 = 32$   
 $x-1 = \pm\sqrt{32}$   
 $x-1 = \pm 4\sqrt{2}$   
 $x = 1 \pm 4\sqrt{2}$

