

Coordinate Plane and GraphsExample #1: Find any x- or y-intercepts of the graph of the equation.

$$3x + 2y = 6$$

x-int: plug in 0 for y
 $3x + 2(0) = 6$

$$x = 2$$

y int: plug in 0 for x

$$3(0) + 2y = 6$$

$$y = 3$$

Example #2: Sketch

$$y^2 - 2y - x = 0$$

x int

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

$$x = 0$$

$$(0, 0)$$

y int

$$y^2 - 2y = 0$$

$$y(y - 2) = 0$$

$$y = 0 \quad y = 2$$

$$(0, 0) \quad (0, 2)$$

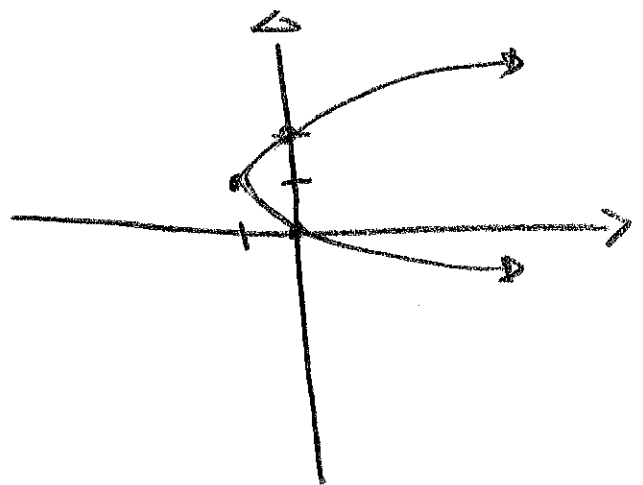
Complete the square

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

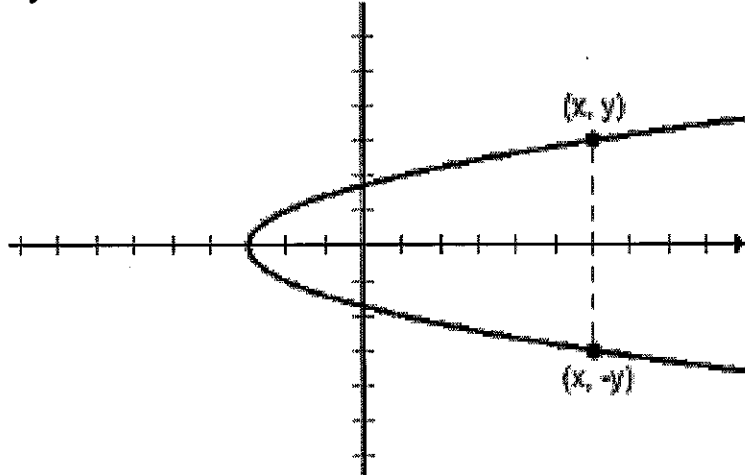
$$(y - 1)^2 = x + 1$$

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

vertex: $(-1, 1)$

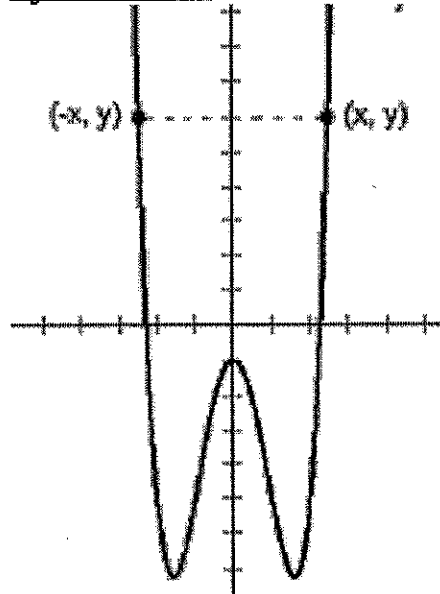


Symmetric About X-axis



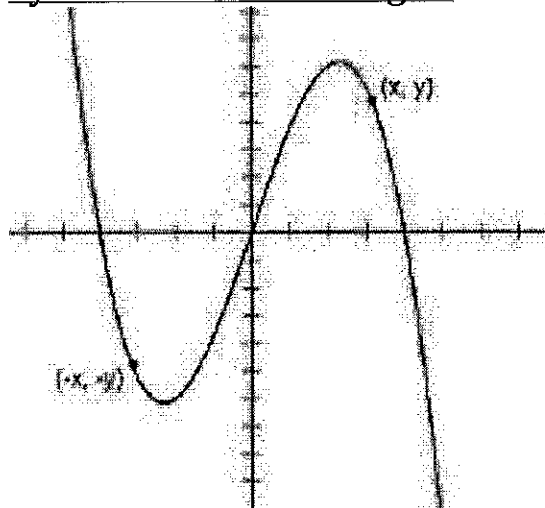
Replace y with $-y$
and it produces
the original
equation

Symmetric about Y-axis:



- even functions are
symm about y-axis
- replace x with $-x$
and it produces the original

Symmetric about Origin:



- odd functions are
symm about the origin
- replace both x with $-x$
and it produces the
original equation.

Lesson #6

Example #3: Test for symmetry algebraically. *★ show all work and what you are plugging in.*

$$y = \frac{1}{8}x^4 - x^2$$

x-axis

replace y w/ -y

$$-y = \frac{1}{8}x^4 - x^2$$

not symm to x-axis

y-axis

replace x with -x

$$y = \frac{1}{8}(-x)^4 - (-x)^2$$

$$y = \frac{1}{8}x^4 - x^2$$

symm to y-axis ✓

Origin

replace x w/ -x
and y w/ -y

$$-y = \frac{1}{8}(-x)^4 - (-x)^2$$

not symm
to origin

Example #4: Test for symmetry algebraically.

$$xy = 5$$

x-axis

$$x(-y) = 5$$

no

y-axis

$$-xy = 5$$

no

origin

$$(-x)(-y) = 5$$

$$xy = 5$$

yes, symm
to origin