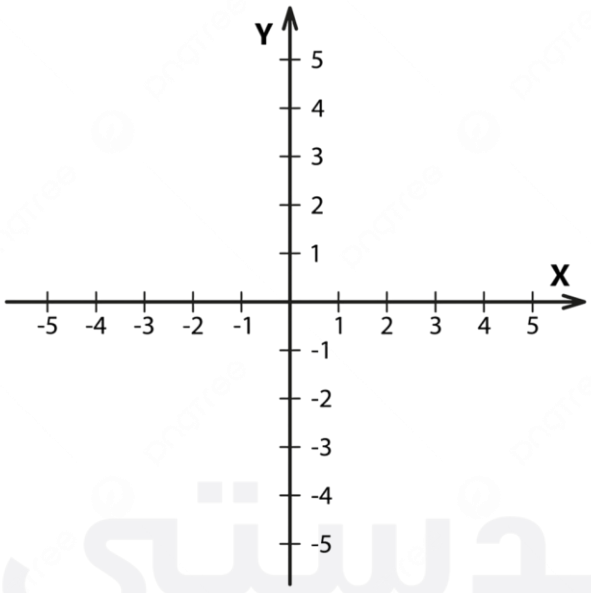
Graphs of Equations in Two Variables

Example 1: Sketch the graph of the equation $x - y = 2$



x	y	(x, y)

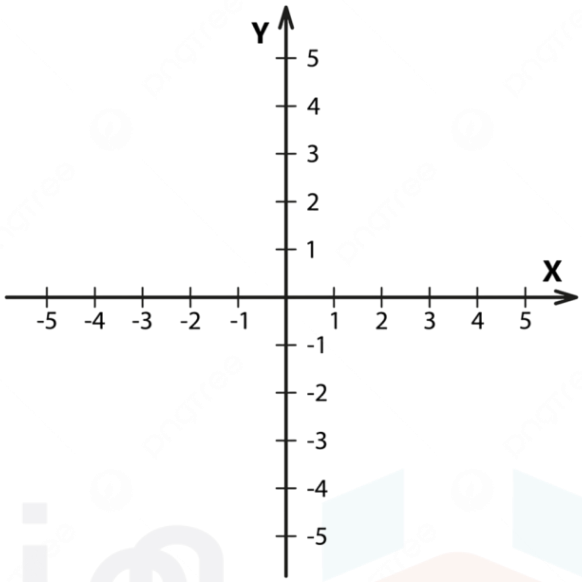
Example 2: Determine whether the given points are on the graph of the equation.

$$x^2 + xy + y^2 = 4; \quad (0, -2), (1, -2), (2, -2)$$

Example 3: Make a table of values and sketch the graph of the equation.

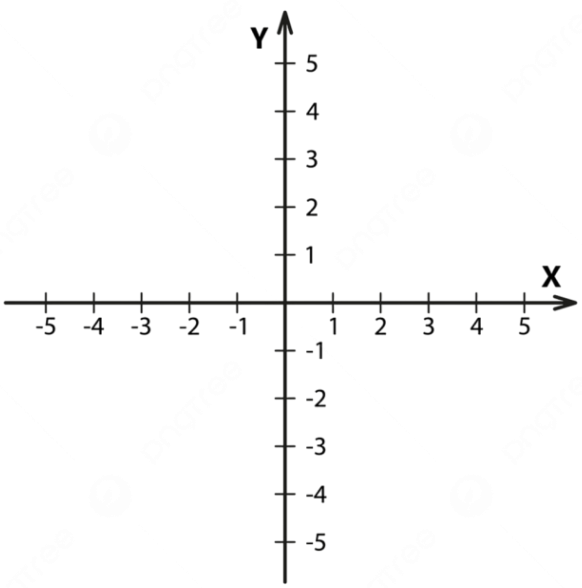
- $x^2 - y = 2$

x	y	(x, y)



- $y = |x| - 1$

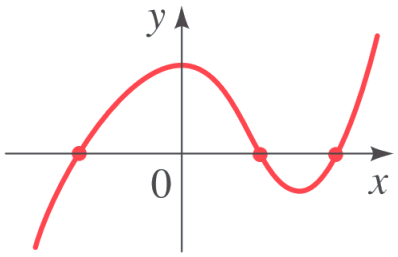
x	y	(x, y)



Intercepts

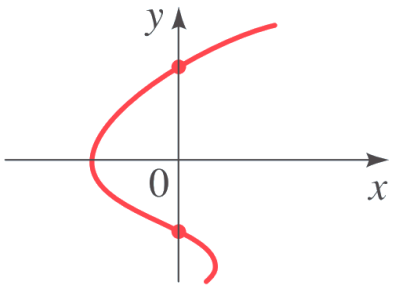
To find x-intercepts:

$$Set\ y\ =\ 0\ and\ solve\ for\ x$$



To find y-intercepts:

$$Set\ x\ =\ 0\ and\ solve\ for\ y$$

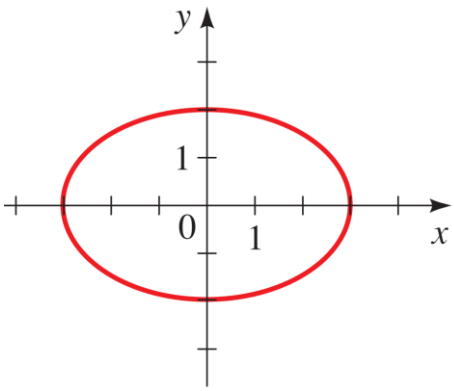


Example 1: Find the x-and y-intercepts of the graph of the equation.

- $y = x^2 - 5$
- $x^2 - xy + 3y = 1$
- $9x^2 - 4y^2 = 36$
- $y = \sqrt{x^2 - 16}$

Example 2: Find the x- and y-intercepts.

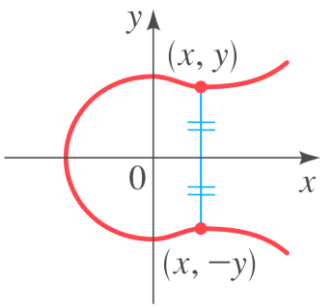
- $4x^2 + 9y^2 = 36$



- $x^4 + y^2 - xy = 16$

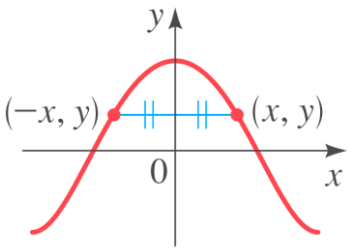
Symmetry

Types of Symmetry



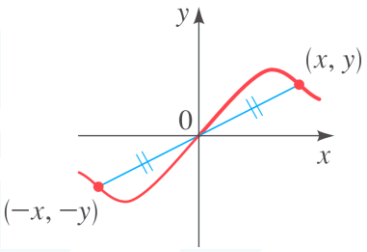
With respect to the x-axis (Mirror about x)

No Change in the equation if we replace y by $-y$.



With respect to the y-axis (Mirror about y)

No Change in the equation if we replace x by $-x$.



With respect to the $Origin$ (Mirror about origin)

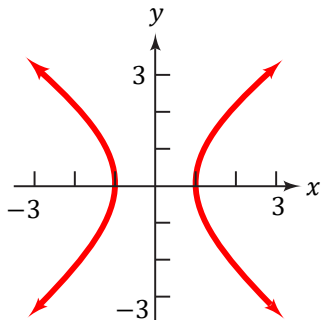
No Change in the equation if we replace x by $-x$ and y by $-y$.

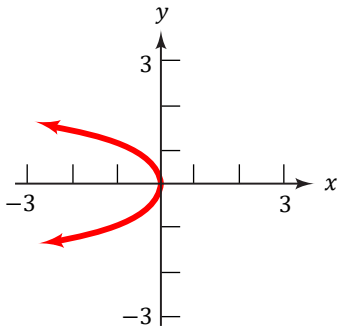
Example 1: Test the equation for symmetry.

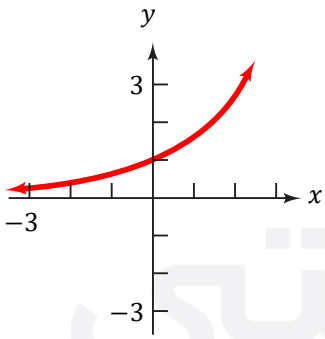
- $y = x^4 + x^2$

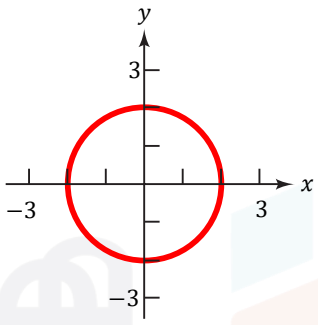
- $y = x^2 + |x|$

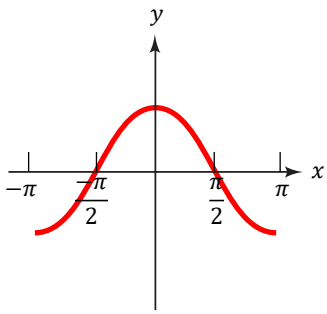
Example 2: What is the type of symmetry?

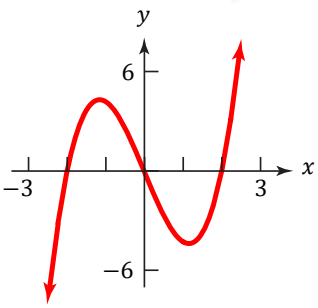


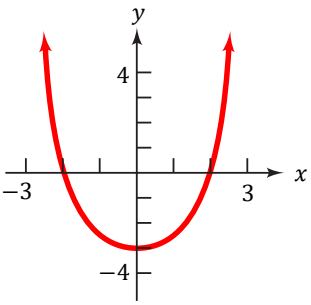






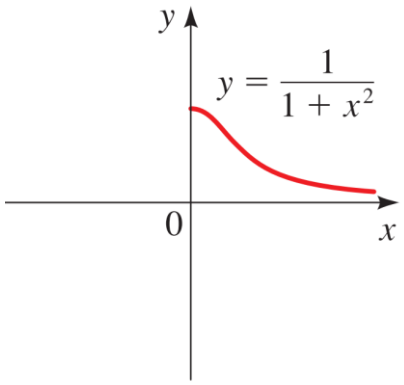






Example 3: Complete the graph using the given symmetry property.

- Symmetric with respect to the y-axis



- Symmetric with respect to the origin