§ 2.2 Graphs of Equations in Two Variables; Intercepts; Symmetry

Graphing by Plotting Points

Are the following points on the graph of $2x - y = 6$?

a) (2, 3)

b) (2, –2)

Example: Sketch the graph of the line $y = 2x + 5$ by completing the table and then plotting the points.

x	y
0	
1	
–5	

Example: Sketch the graph of $y = x^2 - 2$ by completing a table and then plotting the points.

Intercepts of a Graph

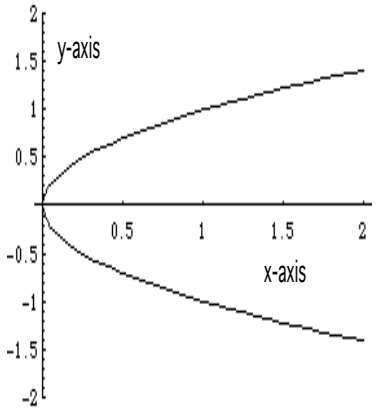
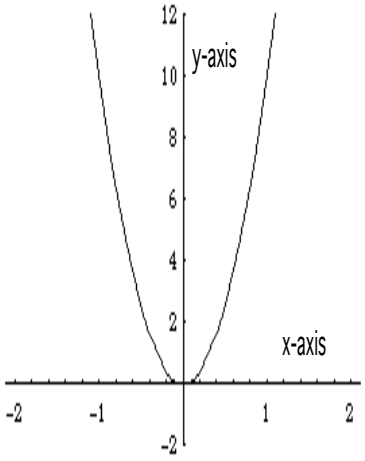
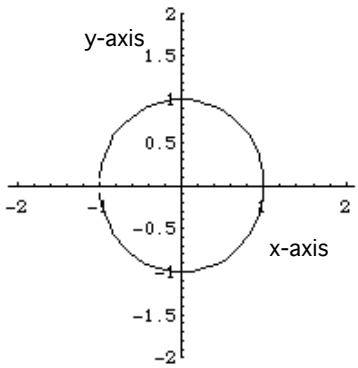
x-intercepts- where the graph crosses the x-axis.
Also called **roots** or **zeros**.
To find x-intercepts, let $y = 0$ and solve for x.

y-intercepts- where the graph crosses the y-axis.
To find the y-intercept, let $x = 0$ and solve for y.

Example: Find the x- and y- intercepts of $y = x^2 - 4$

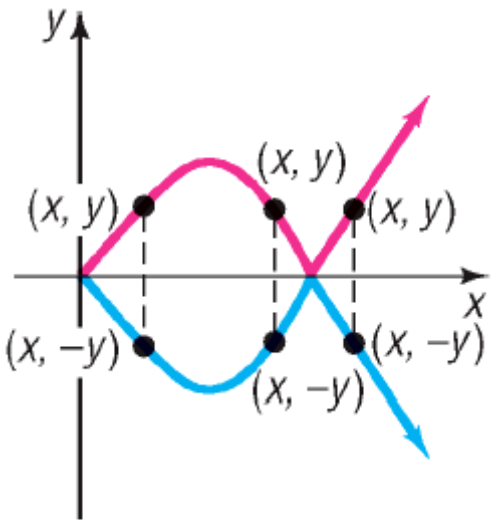
Tests for Symmetry

Symmetric with respect to:

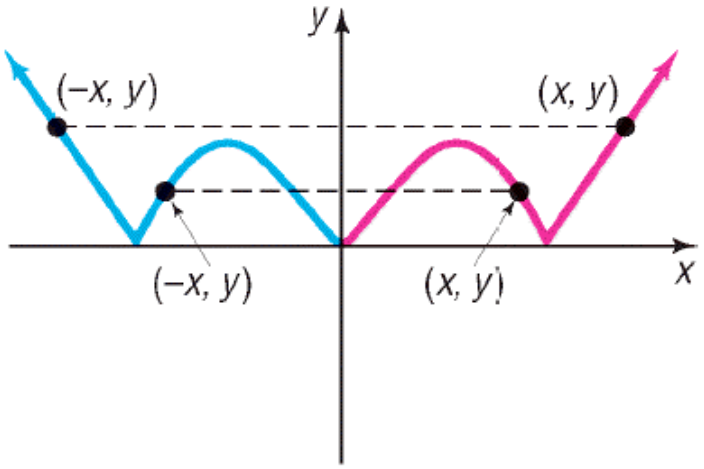
	x – Axis	y – Axis	Origin
TEST	Replace y with – y (same equation should result)	Replace x with – x (same equation should result)	Replace y with – y **and** replace x with – x (same equation should result)
Example			

Example: Test for symmetry with respect to the x-axis, y-axis, and origin.

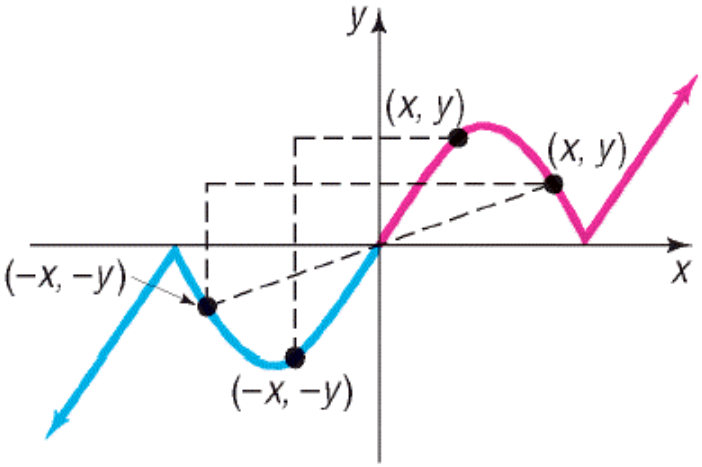
$$y = \frac{4x^2}{x^2 + 1}$$



Symmetry with respect to the *x*-axis



Symmetry with respect to the *y*-axis



Symmetry with respect to the origin