

Section 2.2: Graphs of Functions

Key Topics: graphing techniques, symmetry, circles

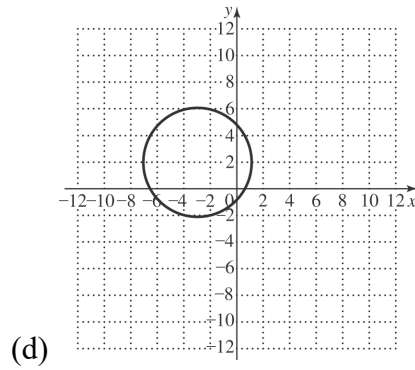
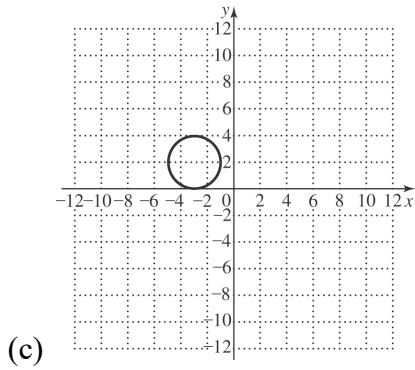
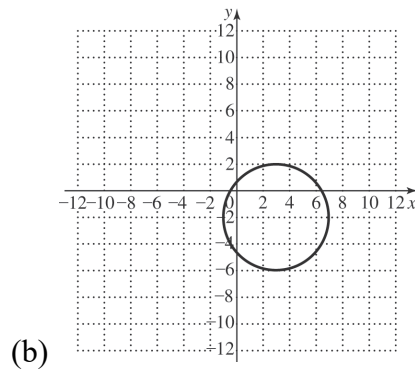
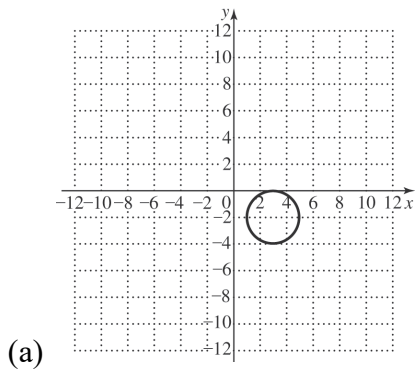
SKETCHING A GRAPH BY PLOTTING POINTS

Step 1 _____.

Step 2 _____.

Step 3 _____.

Graph the equation $(x + 3)^2 + (y - 2)^2 = 4$.



FINDING THE INTERCEPTS OF THE GRAPH OF AN EQUATION

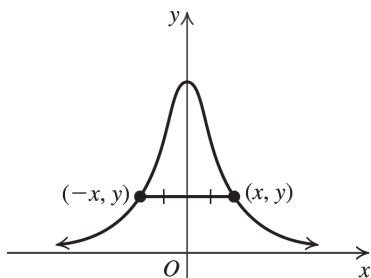
Step 1 _____
 _____.

Step 2 _____
 _____.

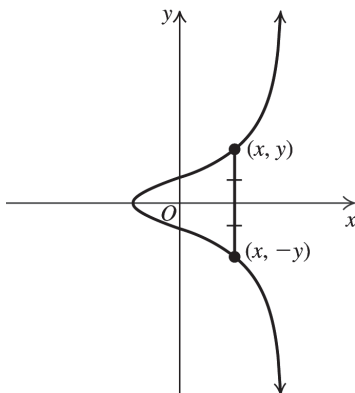
Find the intercepts of the graph of the equation $y = x^2 - x - 6$.

SYMMETRIES

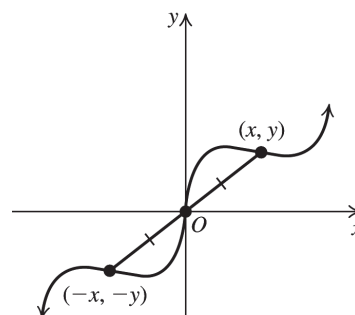
1. A graph is _____ if for every point (x, y) on the graph the point $(-x, y)$ is also on the graph.
2. A graph is _____ if for every point (x, y) on the graph the point $(x, -y)$ is also on the graph.
3. A graph is _____ if for every point (x, y) on the graph the point $(-x, -y)$ is also on the graph.



(a)



(b)



(c)

TESTS FOR SYMMETRY

1. The graph of an equation is symmetric about the _____ if replacing x with $-x$ results in an equivalent equation.
2. The graph of an equation is symmetric about the _____ if replacing y with $-y$ results in an equivalent equation.
3. The graph of an equation is symmetric about the _____ if replacing x with $-x$ and y with $-y$ results in an equivalent equation.

Using Example 8 as a reference, sketch the graph of $y = x^3 - 9x$.

Circle

A _____ is a set of points in a Cartesian coordinate plane that are at a fixed distance r from a specified point (h, k) . The fixed distance r is called the _____ of the circle, and the specified point (h, k) is called the _____ of the circle.

The Standard Form for the Equation of a Circle

The equation of a circle with center (h, k) and radius r is

(1) _____

and is called the **standard form** of an equation of a circle.

Find the standard form of the equation of a circle with center $(-2, 4)$ which passes through the point $P = (1, 4)$.

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