1.2 Graphs of Equations

Determining Solutions

Ex 1) Determine whether the given points are solutions to the equation $y = 10x - 7$

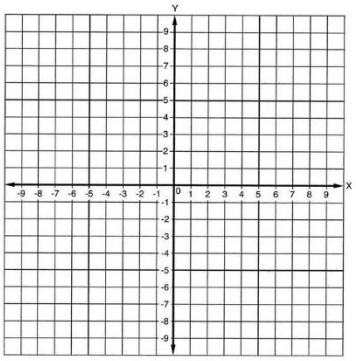
a.)

b.)

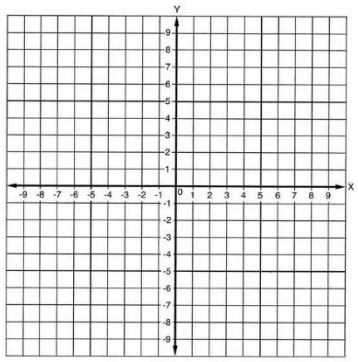
Sketching the Graph of an Equation – you can ALWAYS create a chart of x and y values, and plot these points. To make this easier, solve the equation for one variable (y is best) first. Its helpful to choose some positive AND negative x values.

Sketch the graph of each. Plot at least 5 points.

c.)



d.)



x and y intercepts

x-intercepts:

- Point(s) found on the x axis (where the graph of the function crosses the x axis)
- Found by plugging 0 in for y, and solving for x. The y intercept is a coordinate point (x , 0)

y-intercepts

- Point(s) found on the y-axis (where the graph of the function crosses the y axis)
- Found by plugging 0 in for x, and solving for y. The y intercept is a coordinate point (0, y)

Examples: Find the x and y intercepts of each.

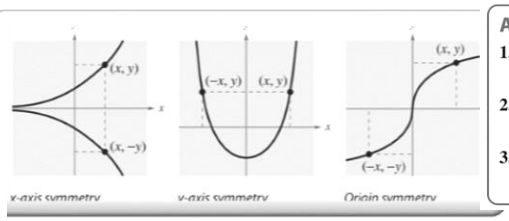
e.)

f.)

Symmetry within Graphs

Graphical Tests for Symmetry

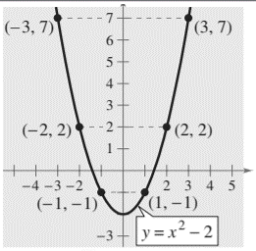
1. A graph is **symmetric with respect to the *x*-axis** if, whenever (x, y) is on the graph, $(x, -y)$ is also on the graph.
2. A graph is **symmetric with respect to the *y*-axis** if, whenever (x, y) is on the graph, $(-x, y)$ is also on the graph.
3. A graph is **symmetric with respect to the origin** if, whenever (x, y) is on the graph, $(-x, -y)$ is also on the graph.



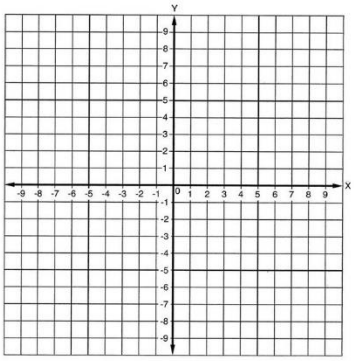
Algebraic Tests for Symmetry

1. The graph of an equation is symmetric with respect to the x-axis if replacing y with $-y$ yields an equivalent equation.
2. The graph of an equation is symmetric with respect to the y-axis if replacing x with $-x$ yields an equivalent equation.
3. The graph of an equation is symmetric with respect to the origin if replacing x with $-x$ and y with $-y$ yields an equivalent equation.

g) Tell whether the graph of the function is symmetric with respect to the x-axis, the y-axis, or neither. Explain.

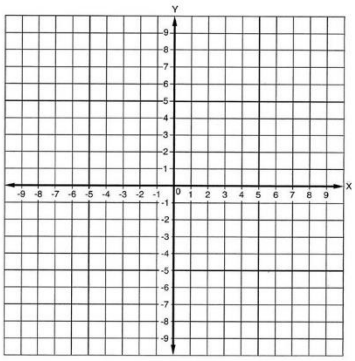


h.) Use symmetry to sketch the graph of the given function. Graph a total of 6 points.



The Graph of an Absolute Value Equation – always symmetrical about the vertex

i.) Sketch the graph of the given function. Plot at least 5 points total, including the vertex.



Standard Form of the Equation of a Circle:

$(x-h)^2+(y-k)^2=r^2$ where r = radius, the point (h, k) is the center, and the point (x, y) is some point on the circle

j.) Write the standard form of the equation of the circle using the given information.