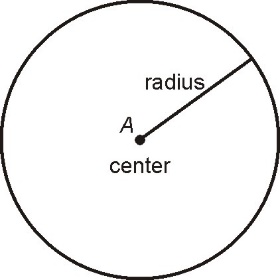
**Equation of a Circle Notes**

A **circle** is a two dimensional shape with all points located an equal distance from the **center**. We call the distance from the center to any point on the circle the **radius**.

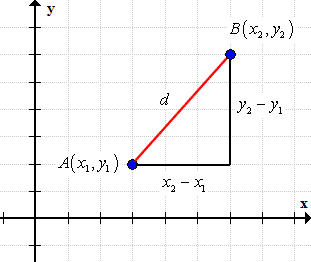


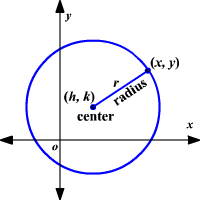
**The Distance Formula**

When performing geometry on a coordinate plane, we can modify the Pythagorean Theorem to find the distance between two points.

We can use horizontal distance and vertical distance as the legs of a right triangle and the distance between two points as the hypotenuse.

Usually we rewrite the distance formula highlighting d by taking the square root and placing at the front of the equation.

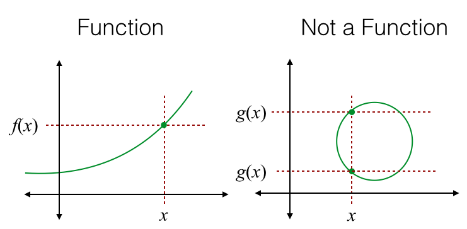




The equation of a circle is a modified version of the **distance formula**

Since the distance from center to any point on the circle is equal, we can use the distance formula to create an equation.

Rewrite with the center defined as the point (h,k) and any point on the circle as (x, y)



It is important to note that this is an **equation** and a **relation** but **not a** **function** as a circle fails the **vertical line test**.

If we solve for y, we would find…

The square root gives positive and negative answers, so a circle is not a function, if graphed as a function we get a semicircle.

