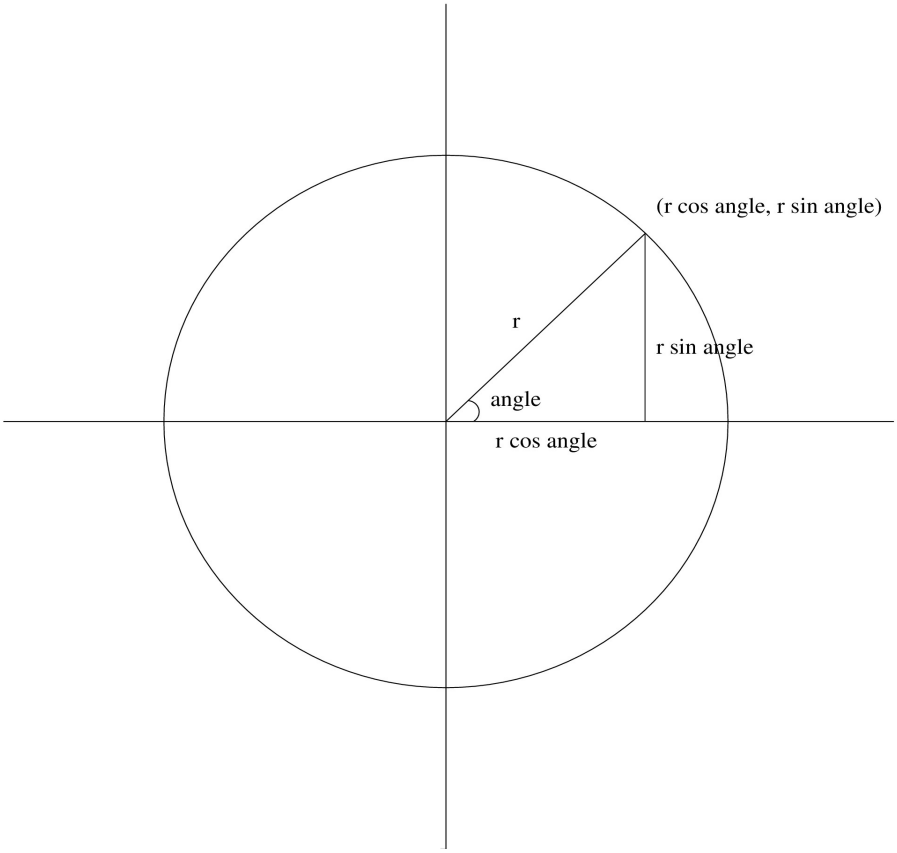
Polar Form of a Circle :

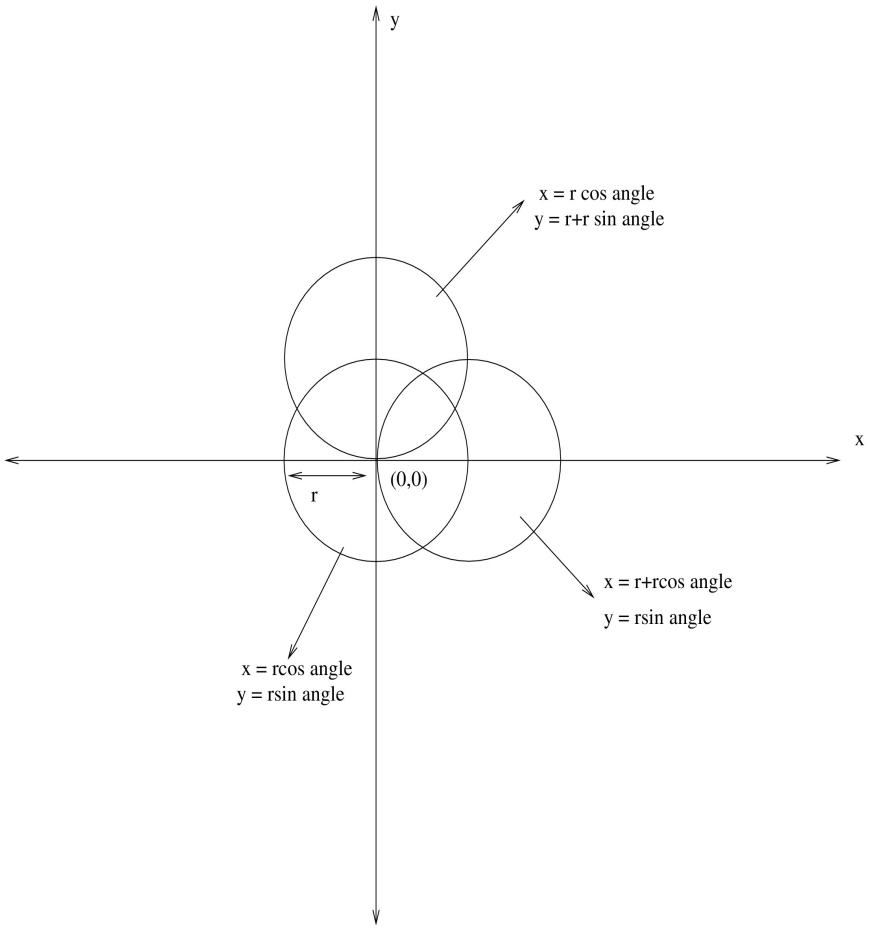
The polar coordinate system is a two-dimensional coordinate system in which each point on a plane is determined by a distance from a fixed point and an angle from a fixed direction. Keeping the radius as constant value(as the radius of the circle of the cant change), the angle keeps on varying until the circle is complete.



Here, we have a circle with radius r.
Along the x- axis it is r cos angle and along the y-axis it is r sin angle.

x : r cos angle
y : r sin angle

Circle moved along the axis with radius r :



Three circles are shown in the figure.

Each circle has a radius of r(defined by the user).

Center Circle :

The circle at the center has origin of (0,0) and by using the polar form method a simple cirlce can be drawn by defining the radius r and the angle.

$$x = r \cos angle$$
$$y = r \sin angle$$

Circle on the top :

The circle on the top is along y axis. The origin of this circle is at the edge of the center circle on the y axis. So,the equation of this circle is

$$x = r \cos angle$$
$$y = r + r \sin angle$$

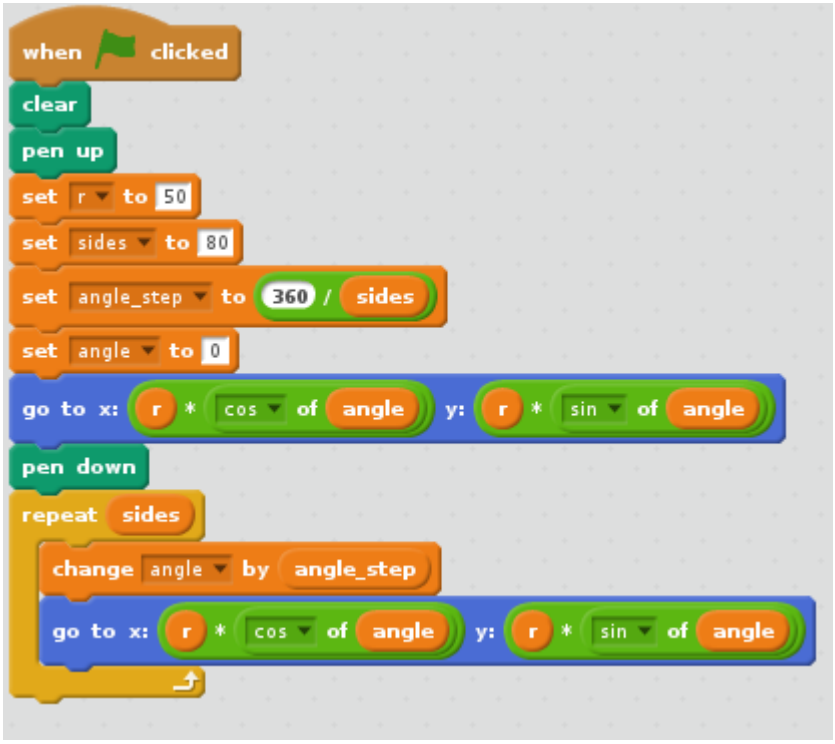
Circle on th right :

The circle on the right is along x axis. The origin of this circle is at the edge of the center circle on the x axis. So,the equation of this circle is

$$x = r + r \cos angle$$
$$y = r \sin angle$$

Drawing a Circle in Scratch using the Trigonometric Formula :

There are number ways to draw a circle in Scratch. Lets have a look at how to draw a circle using the Trigonometric formula(Polar form).



Simple way to make a circle is to use the Motion Scripts and to use the Move keys and angle (360 degree) etc..

Create Variables :

Example ,

Radius, r = 50
Sides(the more no of sides you put, the more it will look like a circle) = 80
Angle_step(to make it move in small angles) = 360/ sides
Angle = 0 degree

Use the Motion script to tell Scartch where you want to start the circle.
Here it is :

In the Loop :

Change the angle by the angle step(so that the angle changes everytime)
Use the formula :

x : r cos angle
y : r sin angle