= r (?) the curve will be symmetrical about the horizontal (0 ° / 180 °) ray , if r (? ? ?) = r (?) it will be symmetric about the vertical (90 ° / 270 °) ray , and if r (? ? ?) = r (?) it will be rotationally symmetric by ? clockwise and counterclockwise about the pole .

Because of the circular nature of the polar coordinate system , many curves can be described by a rather simple polar equation , whereas their Cartesian form is much more intricate . Among the best known of these curves are the polar rose , Archimedean spiral , lemniscate , limaçon , and cardioid .

For the circle , line , and polar rose below , it is understood that there are no restrictions on the domain and range of the curve .

= = = Circle = = =

The general equation for a circle with a center at (r0 , <formula>) and radius a is
<formula>
This can be simplified in various ways , to conform to more specific cases , such as the equation
<formula>
for a circle with a center at the pole and radius a .
When r0 = a , or when the origin lies on the circle , the equation becomes
<formula> .
In the general case , the equation can be solved for r , giving
<formula> ,
the solution with a minus sign in front of the square root gives the same curve .

= = = Line = = =

Radial lines (those running through the pole) are represented by the equation
<formula> ,