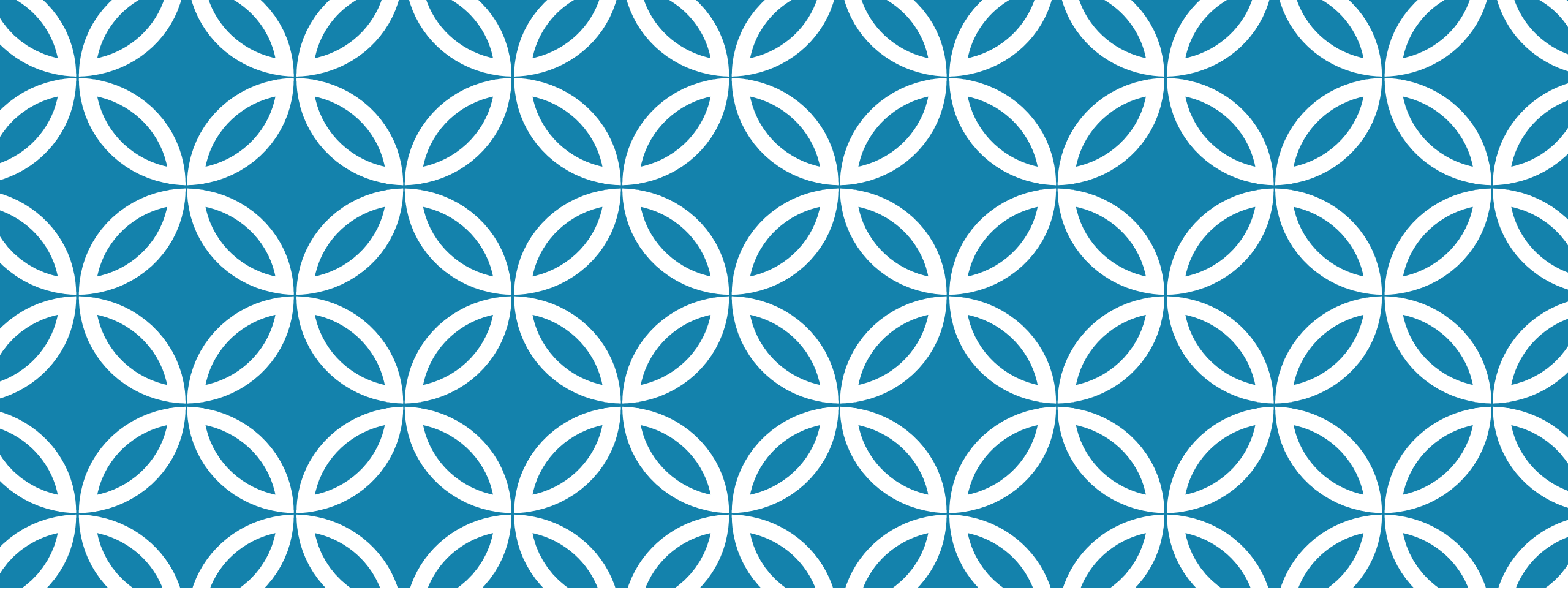
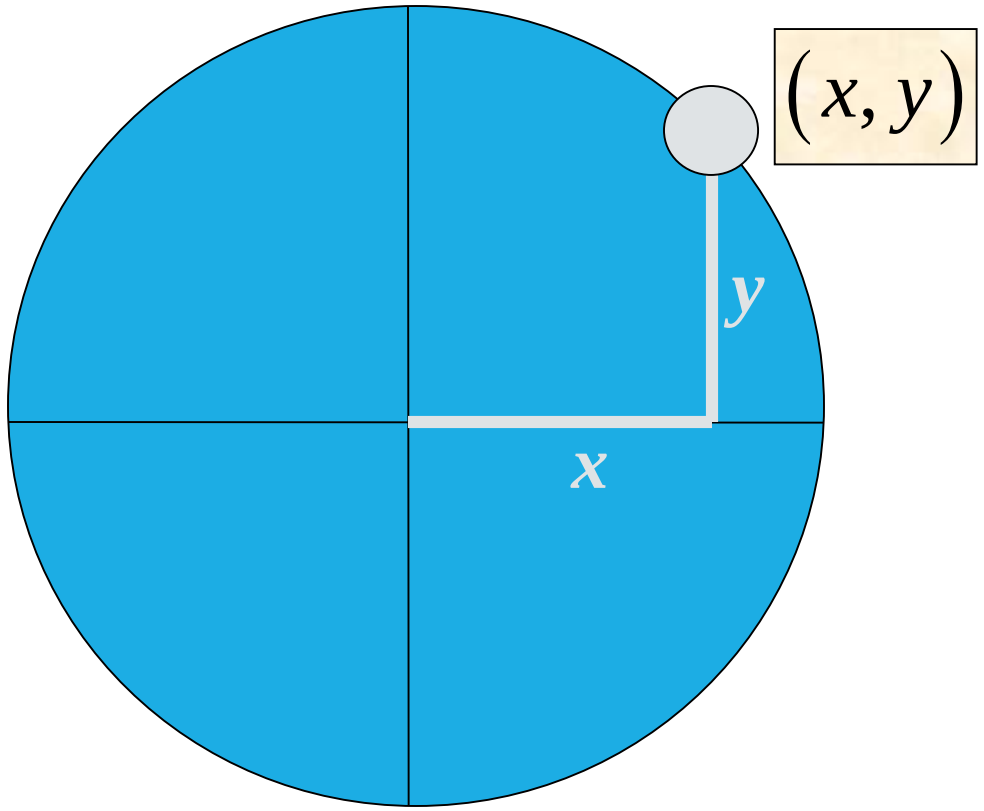


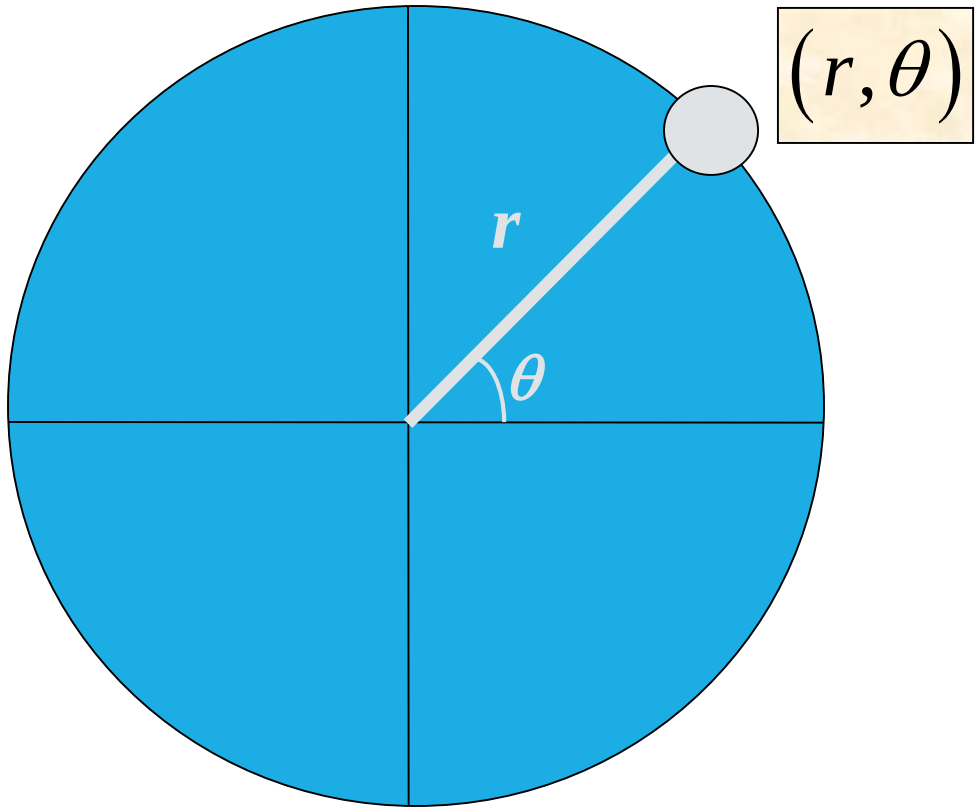
POLAR FUNCTIONS

Section 11.3

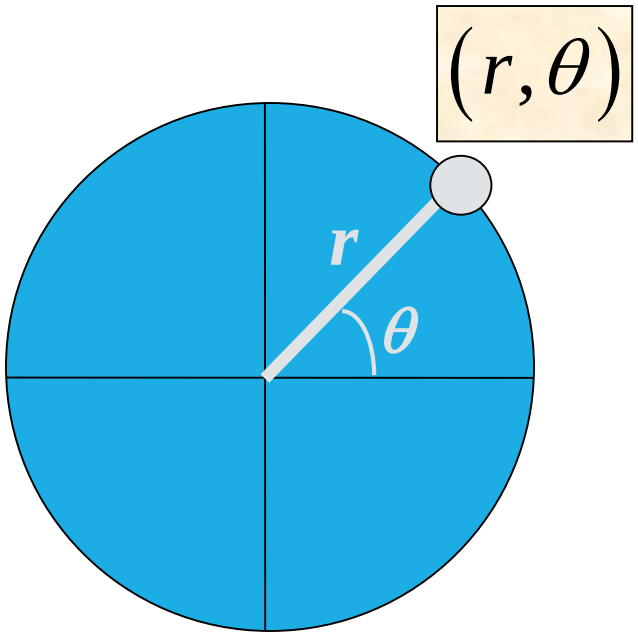
MOST OF THE TIME WE GRAPH ON THE CARTESIAN PLANE.

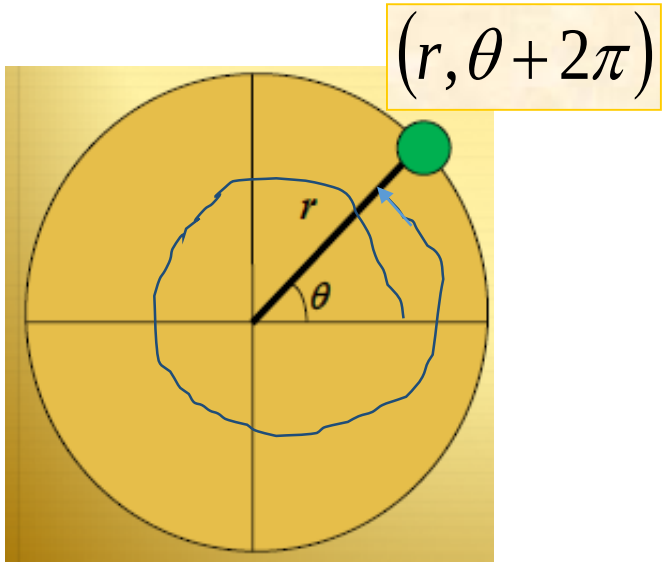


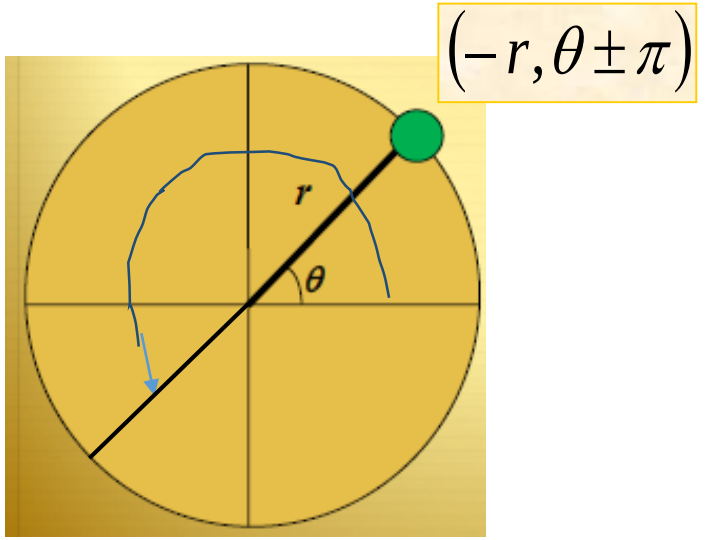
YOU CAN NAME THE SAME POINT USING POLAR COORDINATES



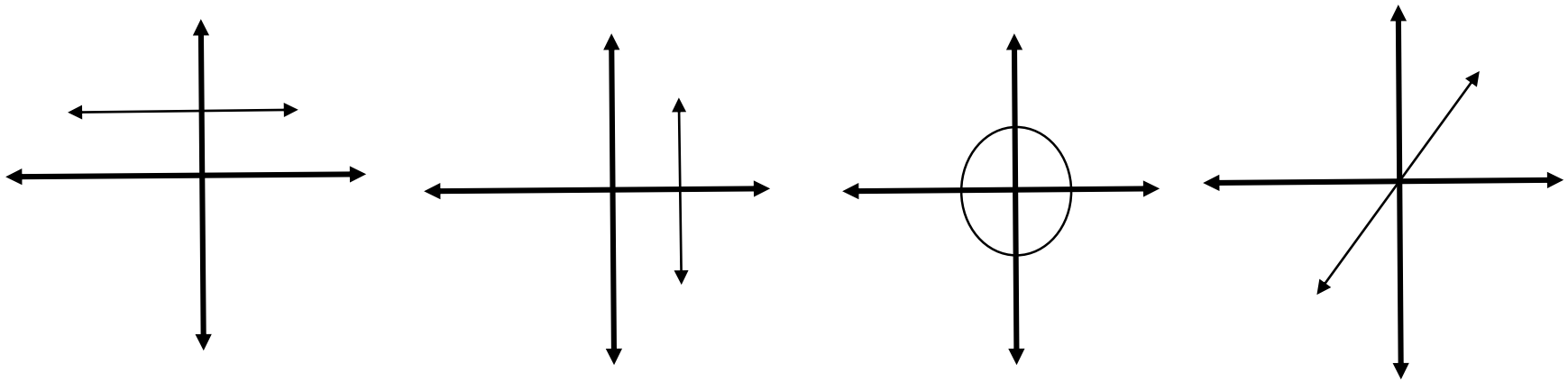
EACH POINT CAN HAVE MANY SETS OF POLAR COORDINATES.







SOME FUNCTIONS ARE EASIER IN CARTESIAN, SOME ARE EASIER IN POLAR

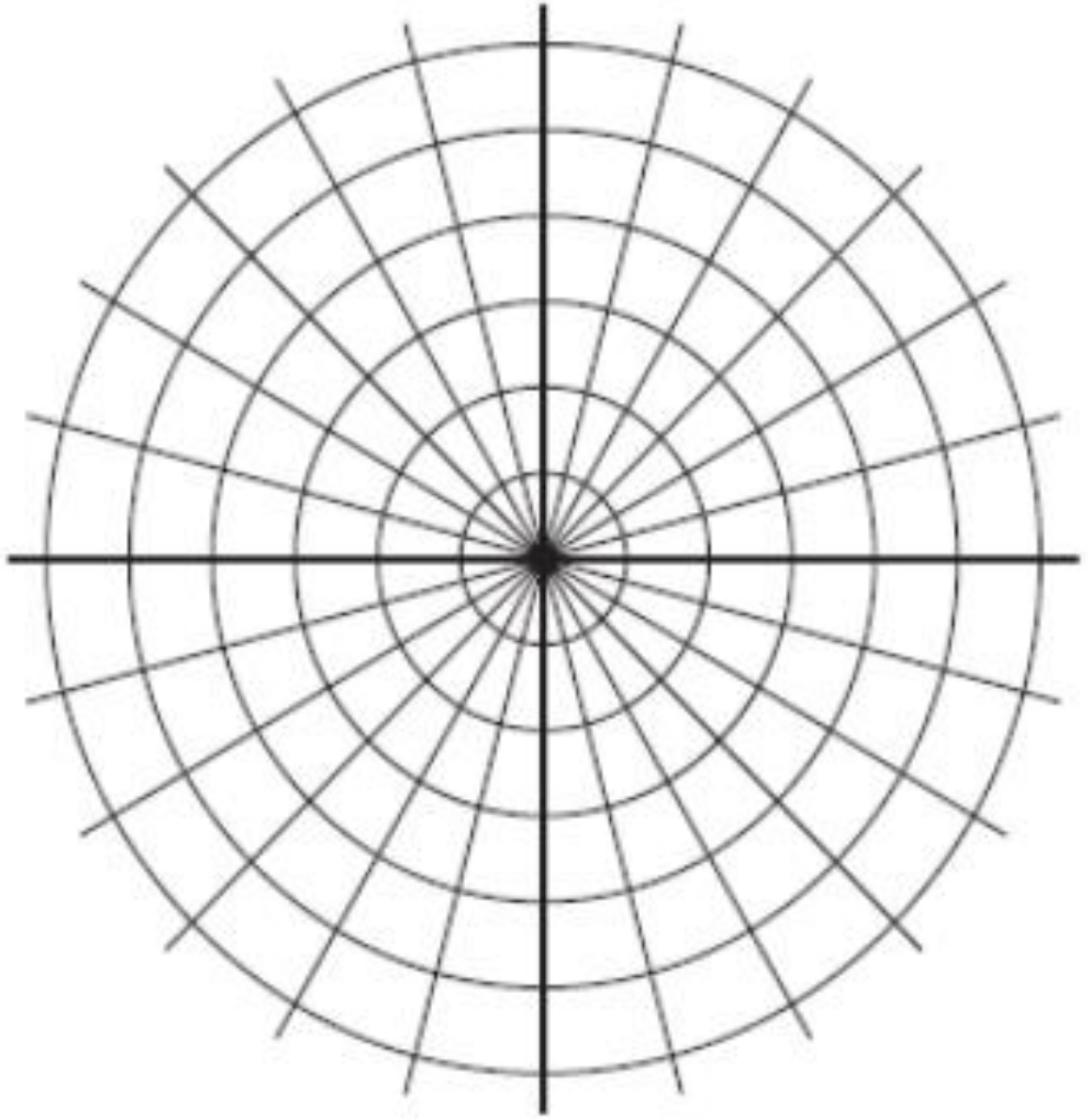


$y = 2$

$x = 2$

$r = 2$

$$\theta = \frac{\pi}{4}$$

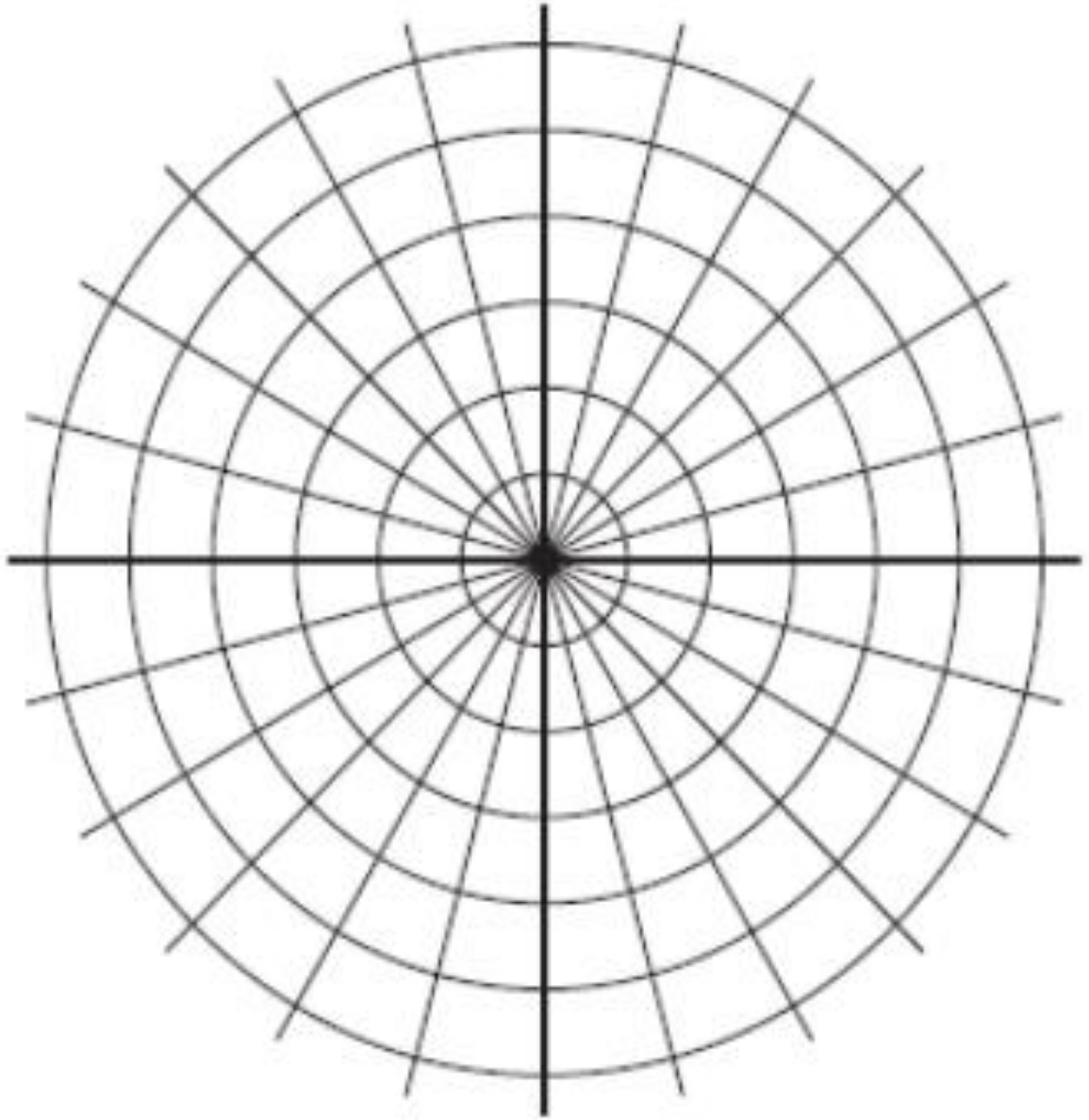


Graph the following points

Grid #1	Grid #2
A(2, π)	C(1, - π/6)
B(-3, π/2)	D(-3, 5π/6)

Grid #3	Grid#4
E(2, 2π/3)	G(-2, 5π/4)
F(-1, π/4)	H(-3, 0)

(r, θ) find angle direction first, then count radius forward(+) or backward (-)



Graph the following

Grid #5

$r = -1$

Grid #6

$\theta = \pi/3$

Grid #7

$$\begin{cases} 1 \le r \le 4 \\ 0 \le \theta \le \pi/2 \end{cases}$$

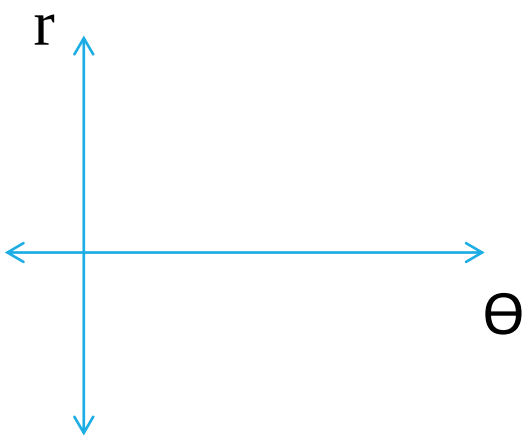
Grid #8

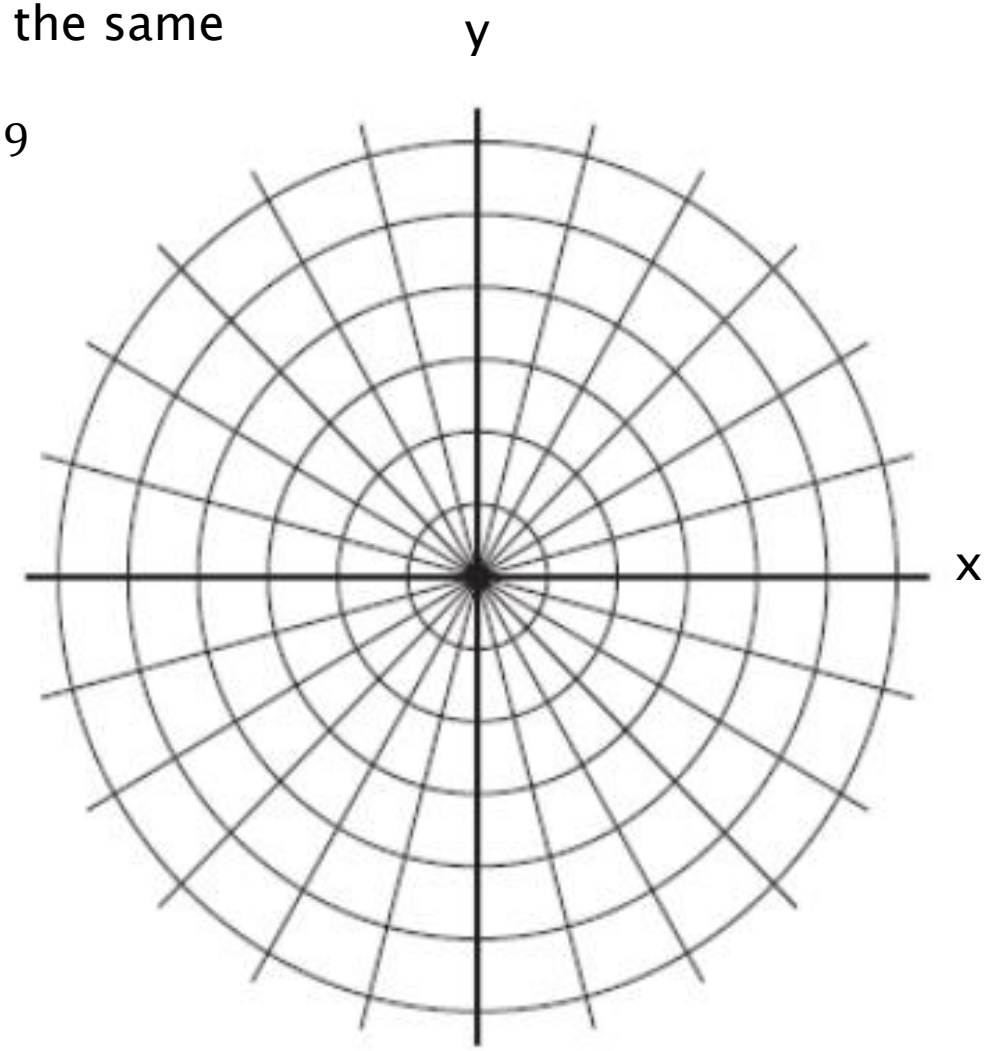
$$\begin{cases} r \le 0 \\ \theta = \pi/4 \end{cases}$$

Only need [0, π], this is the graphing domain

Rectangular Equation for the same graph:

$$x^2 + (y-3)^2 = 9$$





Period is 2π

Graph r = 6 sin Θ

θ	r
0	
π/6	
π/3	
π/2	
2π/3	
5π/6	
π	
7π/6	
4π/3	
3π/2	
5π/3	
11π/6	
2π	