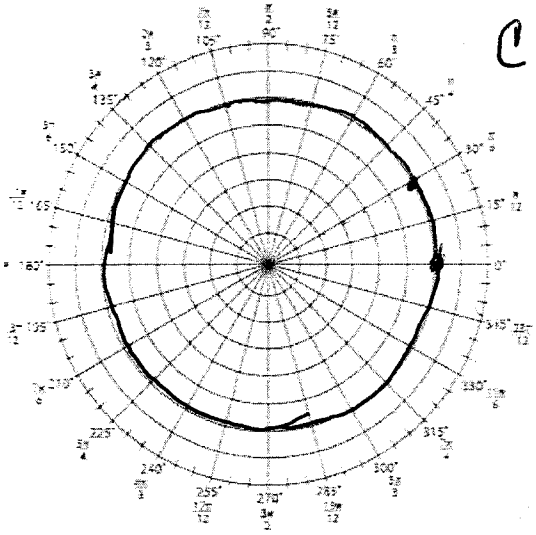
Precalculus Unit 7 Notes-Graphing Polar Equations by Hand

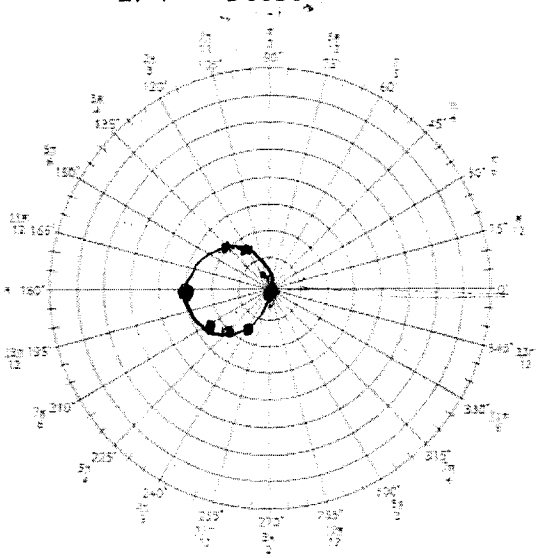
Identify the type of graph. Make a table of values to graph each equation.

1. $r = 6$ circle $r = 6$

C (0,0)



2. $r = -3\cos\theta$ circle diam = 3

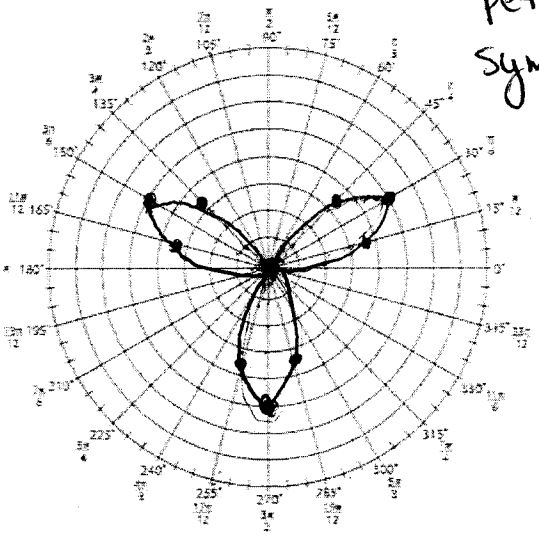


θ	r
0	-3
$\frac{\pi}{2}$	0
π	3
$\frac{3\pi}{2}$	0
$\pi/6$	$-\frac{3\sqrt{3}}{2} \approx -2.6$
$\pi/3$	$-\frac{3}{2}$
$\pi/4$	$-\frac{3\sqrt{2}}{2} = -2.1$
$2\pi/3$	$\frac{3}{2}$
$3\pi/4$	$\frac{3\sqrt{2}}{2} = 2.1$

3. $r = 5\sin 3\theta$ rose 3 petals

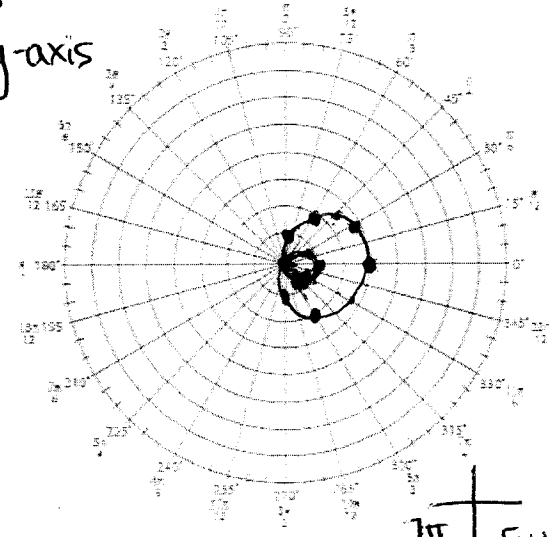
petal length = 5

symm. w.r.t. y-axis



θ	r
0	0
$\pi/6$	5
$\pi/3$	0
$\pi/2$	-5
$2\pi/3$	0
$5\pi/6$	5
π	0
$\pi/12$	$\frac{5\sqrt{2}}{2} \approx 3.5$
$\pi/4$	$\frac{5\sqrt{2}}{2}$
$\frac{5\pi}{12}$	$-\frac{5\sqrt{2}}{2}$

4. $r = 1 + 2\cos\theta$ limaçon w/ a loop



θ	r
0	3
$\frac{\pi}{6}$	$\sqrt{3}+1 \approx 2.7$
$\frac{\pi}{4}$	$\sqrt{2}+1 = 2.4$
$\frac{\pi}{3}$	2
$\frac{\pi}{2}$	1
$\frac{2\pi}{3}$	0
$\frac{3\pi}{4}$	$-\sqrt{2}+1$
$\frac{5\pi}{6}$	$-\sqrt{3}+1$
π	-1
$\frac{7\pi}{6}$	$-\sqrt{3}+1$
$\frac{4\pi}{3}$	0
$\frac{3\pi}{2}$	1
$\frac{5\pi}{3}$	2
11π	$\sqrt{3}+1$