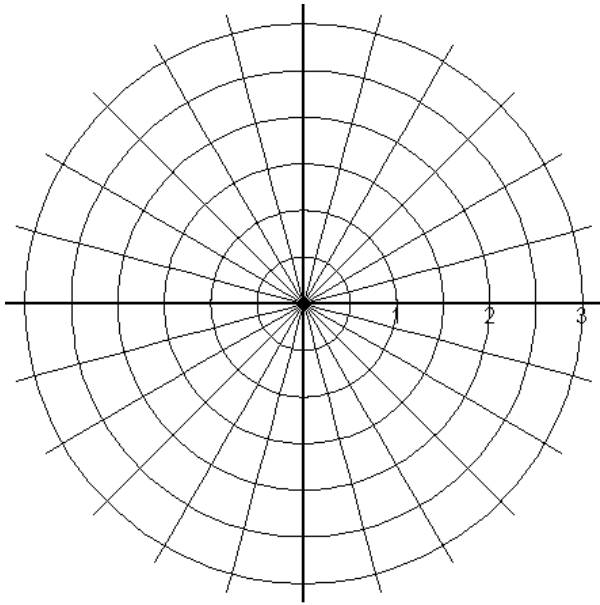


Polar Coordinates Review

Name: _____ www.abbymath.com

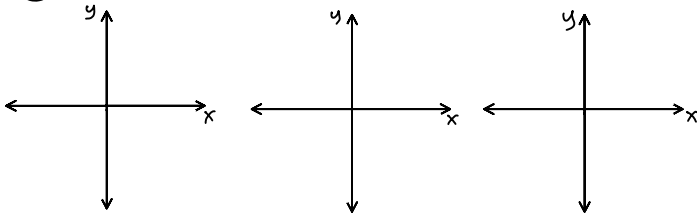


① Plot $f(\theta) = 3\cos 2\theta$ using the points below.

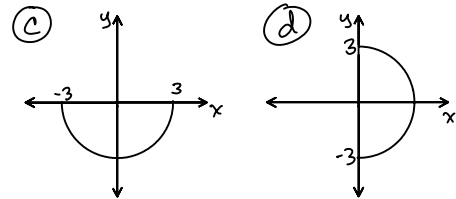
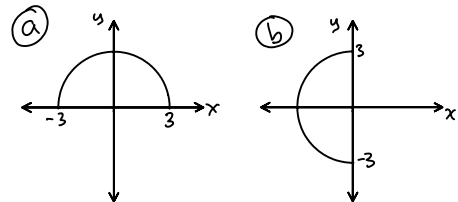
θ	$r = 3\cos 2\theta$	θ	$r = 3\cos 2\theta$
0	3	$13\pi/12$	2.598
$\pi/12$	2.598	$7\pi/6$	1.5
$\pi/6$	1.5	$5\pi/4$	0
$\pi/4$	0	$4\pi/3$	-1.5
$\pi/3$	-1.5	$17\pi/12$	-2.598
$5\pi/12$	-2.598	$3\pi/2$	-3
$\pi/2$	-3	$19\pi/12$	-2.598
$7\pi/12$	-2.598	$5\pi/3$	-1.5
$2\pi/3$	-1.5	$7\pi/4$	0
$3\pi/4$	0	$11\pi/6$	1.5
$5\pi/6$	1.5	$23\pi/12$	2.598
$11\pi/12$	2.598	2π	3
π	3		

② Sketch the graphs of

Ⓐ $f(\theta) = 3$ Ⓑ $f(\theta) = 3\cos\theta$ Ⓒ $f(\theta) = 3\sin\theta$



③ $x^2 + y^2 = 9$ is a circle of radius 3. Write the rectangular equation for each of the following graphs.



④ Use the formulas $x = r\cos\theta$ $y = r\sin\theta$ to prove the formulas for converting x and y to r and θ .



⑤ For each surface, Ⓐ Identify it by name. Ⓑ Sketch it in 3D. Hint: $z = f(x, y)$
 Ⓒ Convert the equation to polar coordinates.
 Ⓓ Describe the projection of the surface in the xy -plane.

Ⓐ $f(x, y) = 9 - x^2 - y^2$

Ⓑ $f(x, y) = x^2 + y^2$
Bounded by $z = 9$

Ⓒ $f(x, y) = \sqrt{9 - x^2 - y^2}$