Trig 9.2

Graph polar equations
Solve systems of polar equations

rose ← $r = \cos 2\theta$

lemniscate $r^2 =$

limaçon $r = 2 + 3\cos\theta$

cardioid $r = 2 + 2\sin\theta$

spiral of Archimedes

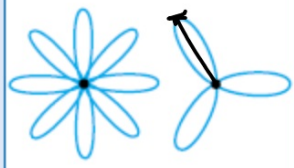
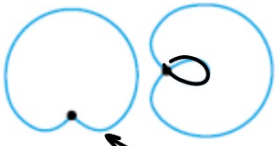
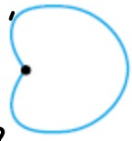
(rad.)

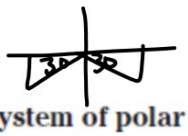
activity: polar graphs and gallery walk

Graphing activity:

Gallery Walk

$r = 2\cos 3\theta$

Classical Curves					
Curve	rose	lemniscate *(pronounced lehm NIHS kuht)*	limaçon *(pronounced lee muh SOHN)*	cardioid *(pronounced KARD ee oyd)*	spiral of Archimedes *(pronounced ar kih MEED eez)*
Polar Equation	$r = a\cos n\theta$ $r = a\sin n\theta$ *n is a positive integer.*	$r^2 = a^2\cos 2\theta$ $r^2 = a^2\sin 2\theta$	$r = a + b\cos\theta$ $r = a + b\sin\theta$	$r = a + a\cos\theta$ $r = a + a\sin\theta$	$r = a\theta$ (θ in radians)
General Graph					



$11 - 29$ 0
$+ 28, 30$

$\cancel{13}$
$\cancel{17}$

4 Graph the system of polar equations. Solve the system using algebra and trigonometry and compare the solutions to those on your graph.

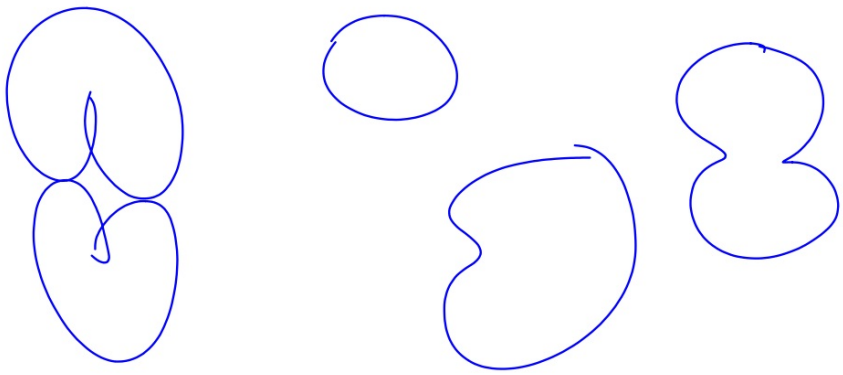
$r = 3 - 3\sin\theta$
$r = 4 - \sin\theta$

$4 - \sin\theta = 3 - \cancel{3\sin\theta}$
$-4 + 3\sin\theta \quad -4 + \cancel{3\sin\theta}$

$\boxed{\frac{2\sin\theta}{2} = \frac{-1}{2}}$

$\sin\theta = \frac{-1}{2} \quad \frac{o}{h}$

(r, θ)

$(4.5 \quad 210°)$ ← $r = 4 - \sin 210$, $4 - +\frac{1}{2}$

$(4.5 \quad 330°)$ ← $r = 4 - \sin 330$, $4 - -\frac{1}{2}$