9-2

NAME _____ DATE _____ PERIOD _____

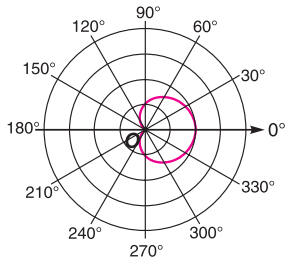
Practice

Graphs of Polar Equations

Graph each polar equation. Identify the type of curve each represents.

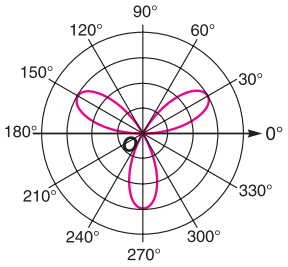
1. $r = 1 + \cos\theta$

cardioid



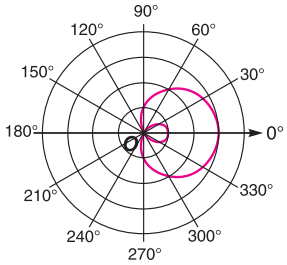
2. $r = 3 \sin 3\theta$

rose



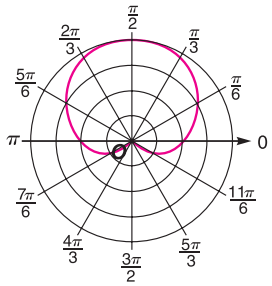
3. $r = 1 + 2\cos\theta$

limaçon



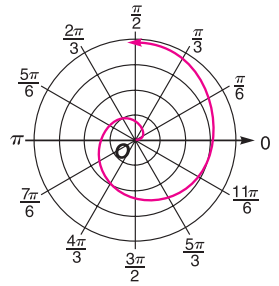
4. $r = 2 + 2\sin\theta$

cardioid



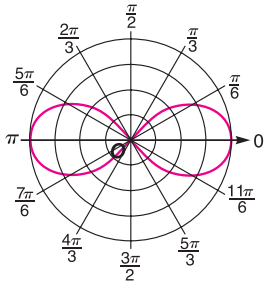
5. $r = 0.5\theta$

spiral of Archimedes



6. $r^2 = 16\cos 2\theta$

lemniscate

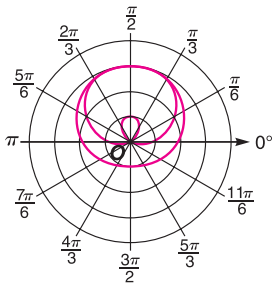


Graph each system of polar equations. Solve the system using algebra and trigonometry. Assume $0 \le \theta < 2\pi$.

7. $r = 1 + 2\sin\theta$

$r = 2 + \sin\theta$

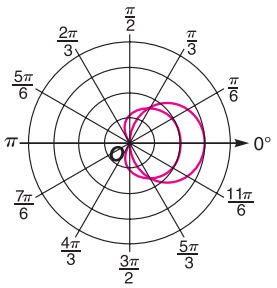
$\left(3, \frac{\pi}{2}\right)$



8. $r = 1 + \cos\theta$

$r = 3\cos\theta$

$\left(1.5, \frac{\pi}{3}\right); \left(1.5, \frac{5\pi}{3}\right)$



9. ***Design*** Mikaela is designing a border for her stationery. Suppose she uses a rose curve. Determine an equation for designing a rose that has 8 petals with each petal 4 units long.

Sample answer: $r = 4\sin 4\theta$

9-2

Symmetry

It is sometimes
properties that
following rules
However, the gr
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1. If replacing θ
the equation
polar axis (th
2. If replacing θ
of the equatio
$\theta = \frac{\pi}{2}$ (the y-
3. If replacing r
of the equatio

Example **Id**
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Th
sy

See student

Identify the sym

1. $r = 2 + 3\cos$

**Symmetric
polar axis.**