

Pre Calculus 8 2 Graphing Polar Equations with Symmetry

Lesson 212 | Precalculus | Polar cardioids and roses

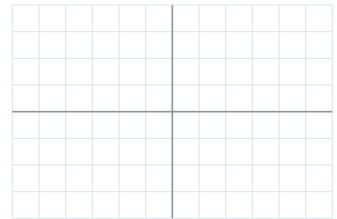
<https://www.youtube.com/watch?v=efrqDk0HdTg>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Sketch $r=12(1+\cos \theta)$. Identify the curve, symmetry, maximum radius, and points at $\theta=0$, $\pi/2$, π , $3\pi/2$.

**02**

Analyze the polar rose $r=6\cos(3\theta)$. Give petal count, petal length, and one direction of maximum positive radius.

03

Analyze the polar rose $r=6\cos(2\theta)$. Give petal count, petal length, and one direction of maximum positive radius.

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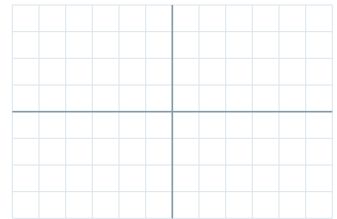
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Name: _____ Date: _____ Show your reasoning.

04

Sketch $r=5(1+\cos \theta)$. Identify the curve, symmetry, maximum radius, and points at $\theta=0, \pi/2, \pi, 3\pi/2$.

**05**

Analyze the polar rose $r=9\cos(2\theta)$. Give petal count, petal length, and one direction of maximum positive radius.

06

Analyze the polar rose $r=8\cos(7\theta)$. Give petal count, petal length, and one direction of maximum positive radius.

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- 01** Sketch $r=12(1+\cos \theta)$. Identify the curve, symmetry, maximum radius, and points at $\theta=0$, $\pi/2$, π , $3\pi/2$.

Cardioid symmetric about the polar axis. Maximum $r=24$ at $\theta=0$. Radius values 24,12,0,12; rectangular points (24,0),(0,12),(0,0),(0,-12).

- 02** Analyze the polar rose $r=6\cos(3\theta)$. Give petal count, petal length, and one direction of maximum positive radius.

Petal count is n for odd n and $2n$ for even n : 3. Petal length 6. At $\theta=0$, $r=6$; hence a petal lies on the positive polar axis.

- 03** Analyze the polar rose $r=6\cos(2\theta)$. Give petal count, petal length, and one direction of maximum positive radius.

Petal count is n for odd n and $2n$ for even n : 4. Petal length 6. At $\theta=0$, $r=6$; hence a petal lies on the positive polar axis.

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04

Sketch $r=5(1+\cos \theta)$. Identify the curve, symmetry, maximum radius, and points at $\theta=0, \pi/2, \pi, 3\pi/2$.

Cardioid symmetric about the polar axis. Maximum $r=10$ at $\theta=0$. Radius values 10,5,0,5; rectangular points (10,0),(0,5),(0,0),(0,-5).

05

Analyze the polar rose $r=9\cos(2\theta)$. Give petal count, petal length, and one direction of maximum positive radius.

Petal count is n for odd n and $2n$ for even n : 4. Petal length 9. At $\theta=0, r=9$; hence a petal lies on the positive polar axis.

06

Analyze the polar rose $r=8\cos(7\theta)$. Give petal count, petal length, and one direction of maximum positive radius.

Petal count is n for odd n and $2n$ for even n : 7. Petal length 8. At $\theta=0, r=8$; hence a petal lies on the positive polar axis.