Math 1432

Bekki George
bekki@math.uh.edu
639 PGH

Office Hours:

Mondays 1-2pm,
Fridays noon-1pm
(also available by appointment)

Class webpage:

http://www.math.uh.edu/~bekki/Math1432.html

POPPER 31

1. If $r \neq 0$, which of the following polar coordinate pairs represents the same point as the point with polar coordinates (r, θ)?

2. Which of the following are the rectangular coordinates of the point with polar coordinate $\left(-2, \frac{-\pi}{3}\right)$?

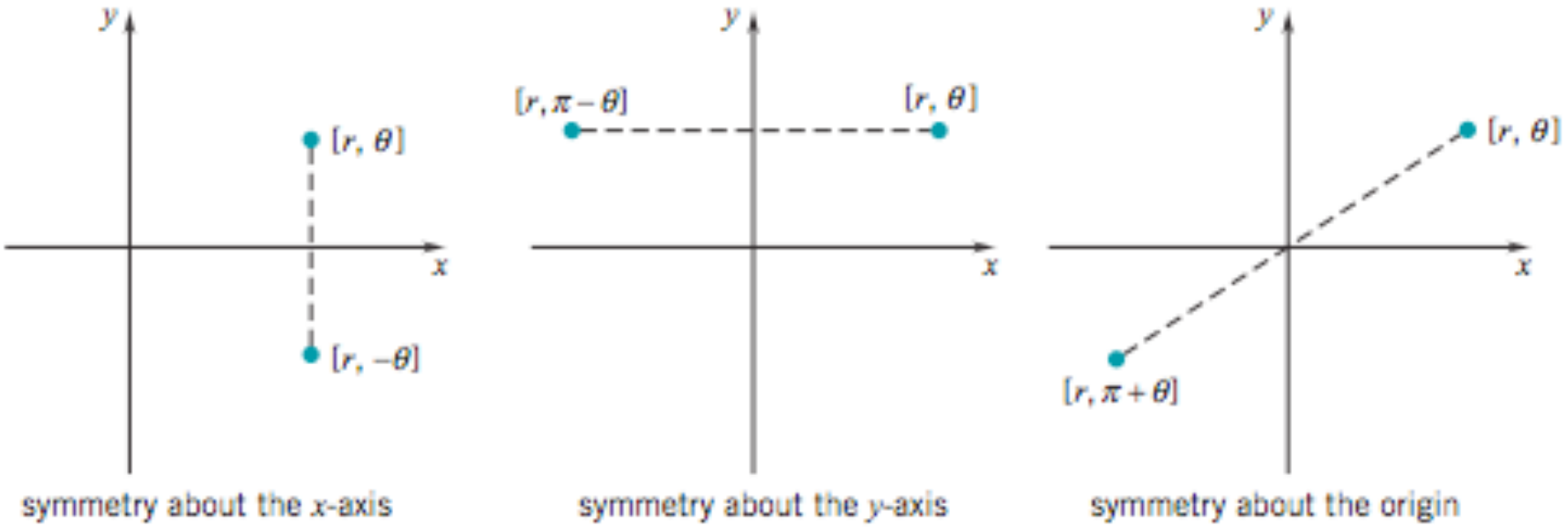
Graphing Polar Equations

Testing for Symmetry

If $\left[r, -\theta \right] \Rightarrow \left[r, \theta \right]$ then the graph is symmetric about the x – axis.

If $\left[r, \pi - \theta \right] \Rightarrow \left[r, \theta \right]$ then the graph is symmetric about the y – axis .

If $\left[r, \pi + \theta \right] \Rightarrow \left[r, \theta \right]$ then the graph is symmetric about the origin.



symmetry about the x-axis | symmetry about the y-axis | symmetry about the origin

Find points of symmetry of $\left[2, \frac{1}{3}\pi\right]$ about:

a) x-axis

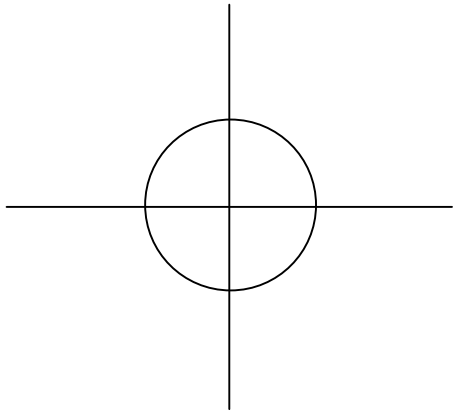
b) y-axis

c) origin

Test $r = 2 + cos\theta$ for symmetry.

Circles

Circle centered at (0, 0) with radius a.

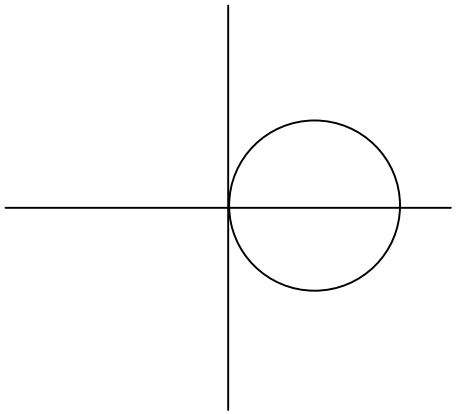


Cartesian:

Polar:

Circle centered at (a, 0) with radius a.

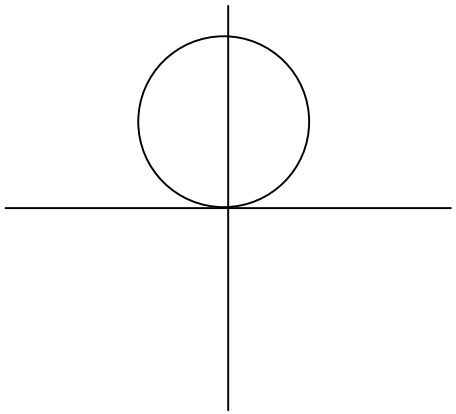
Cartesian:



Polar:

Circle centered at (0, a) with radius a.

Cartesian:



Polar:

Lines

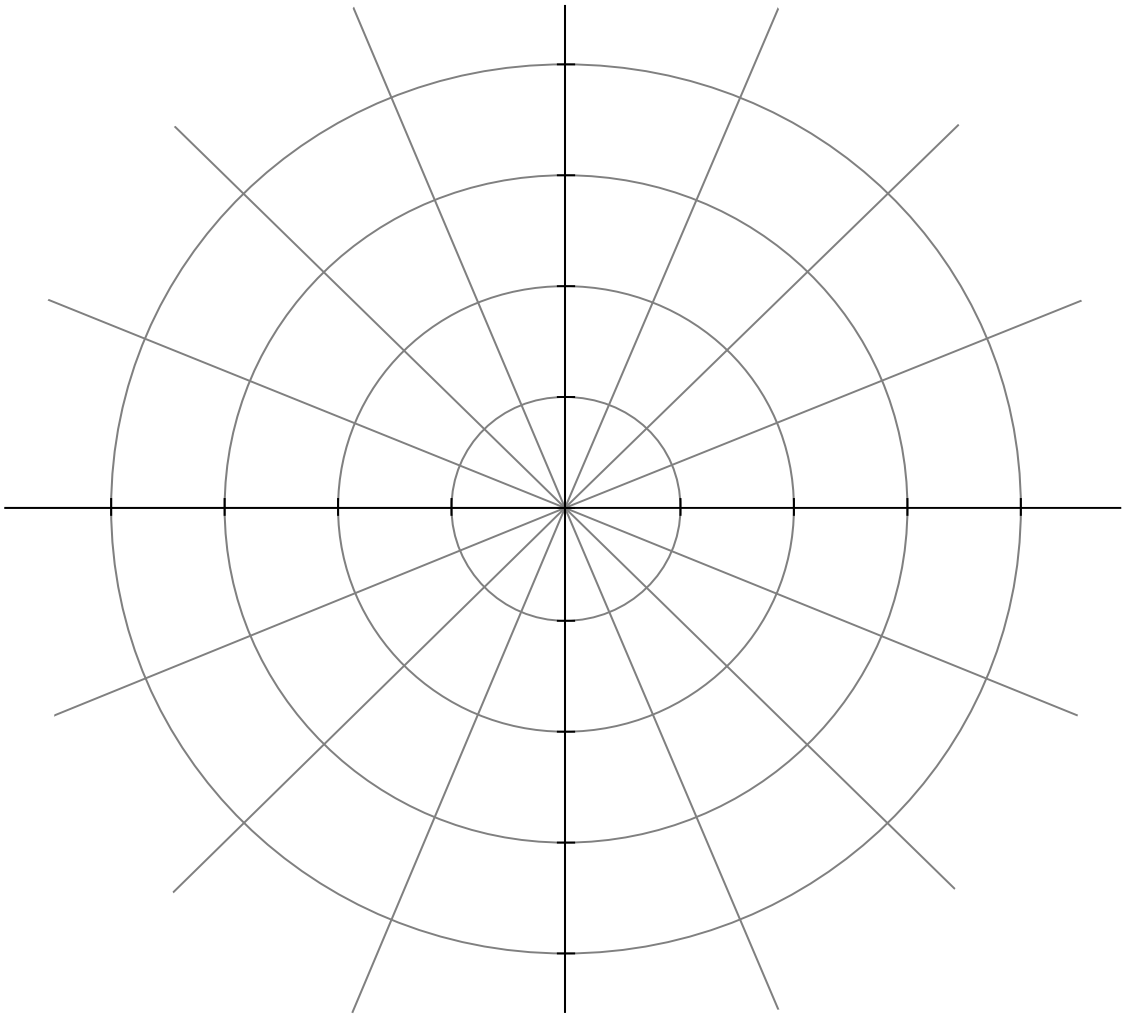
Horizontal Lines:

Vertical Lines:

Lines through the origin:

Arbitrary Lines:

Sketch a graph of $r = 2\sin(3\theta)$

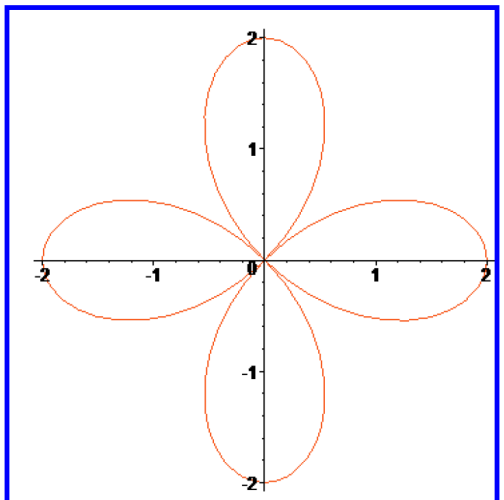


Polar graphs that produce flowers

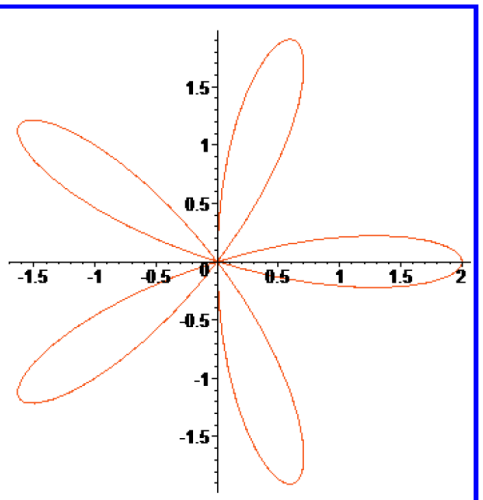
$$r = a\ cos(m\ \theta)$$

$$r = a\ sin(m\ \theta)$$

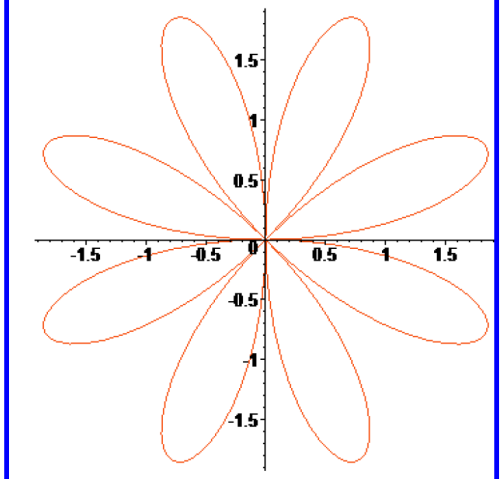
$a > 0$ and m is a positive integer



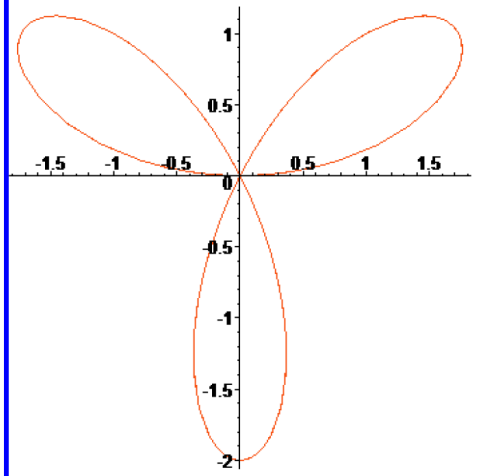
$r = 2\cos(2\theta)$



$r = 2\cos(5\theta)$

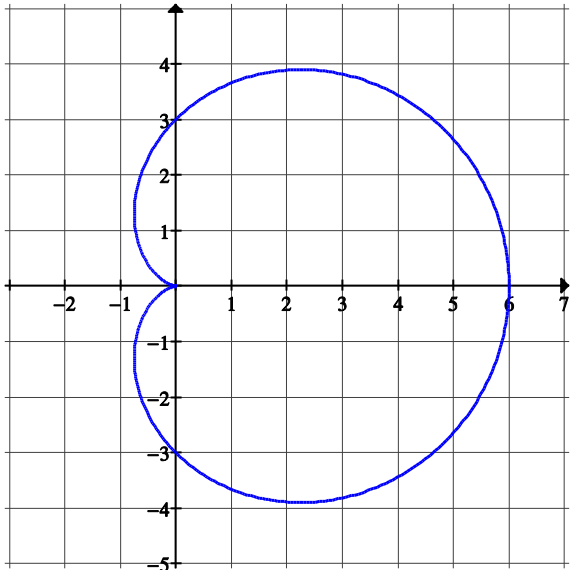


$r = 2\sin(4\theta)$

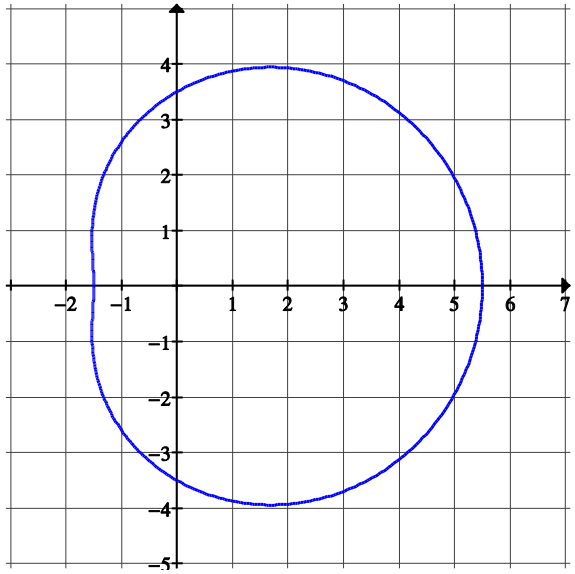


$r = 2\sin(3\theta)$

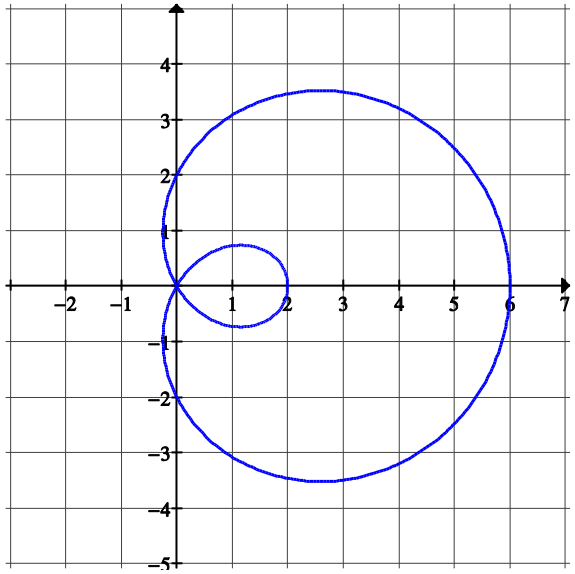
Polar Curves of the form
$r = a + b\cos(\theta)$
and
$r = a + b\sin(\theta)$
Cardiods, Limaçons with dimples and Limaçons with inner loops



Cardioid
$|a| = |b|$

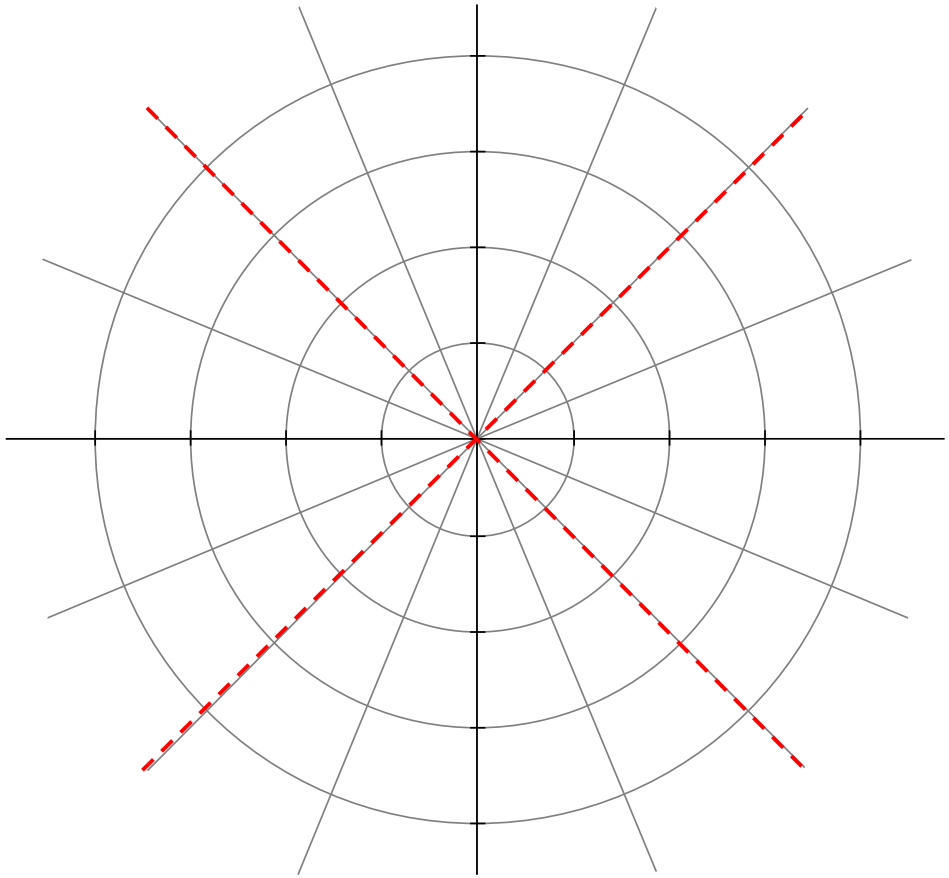


Limaçon with dimple
$|a| > |b|$

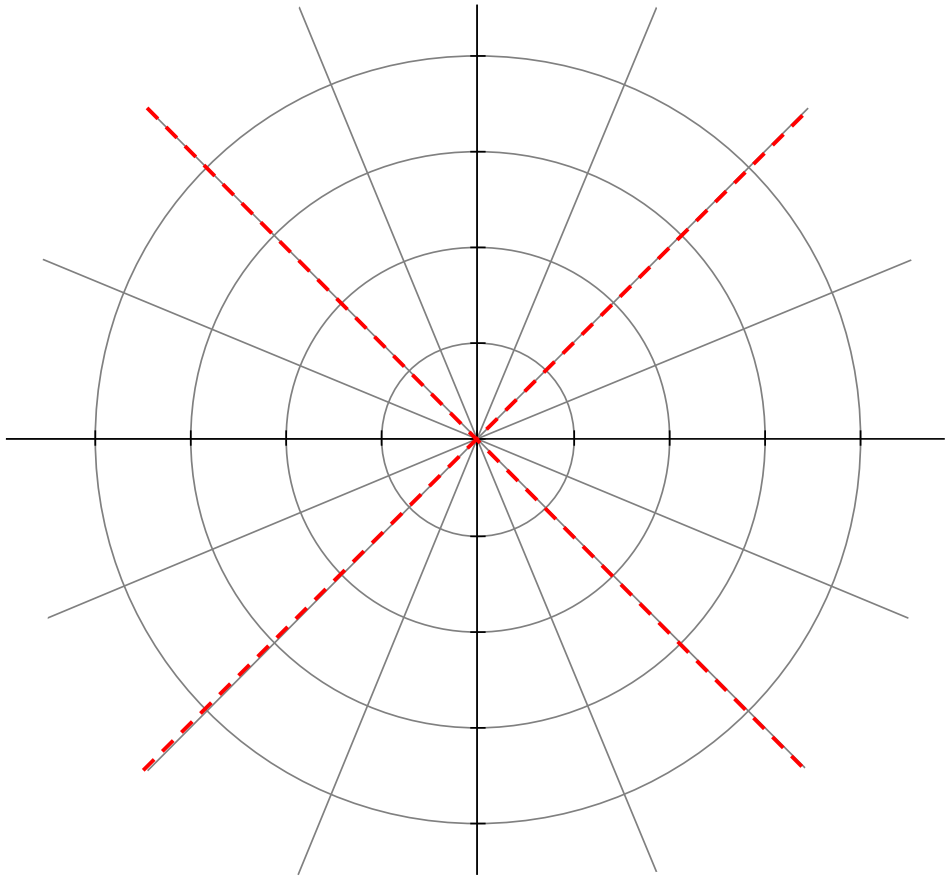


Limaçon with loop
$|a| < |b|$

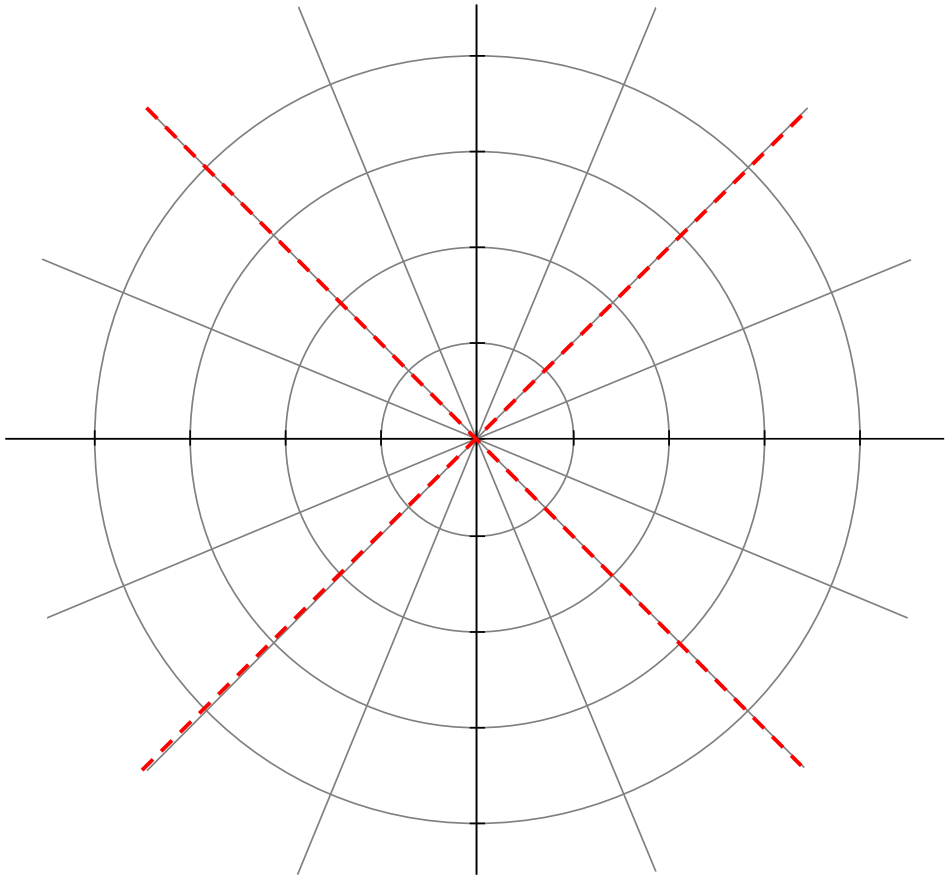
Graph: $r = 2 + 2\cos\theta$



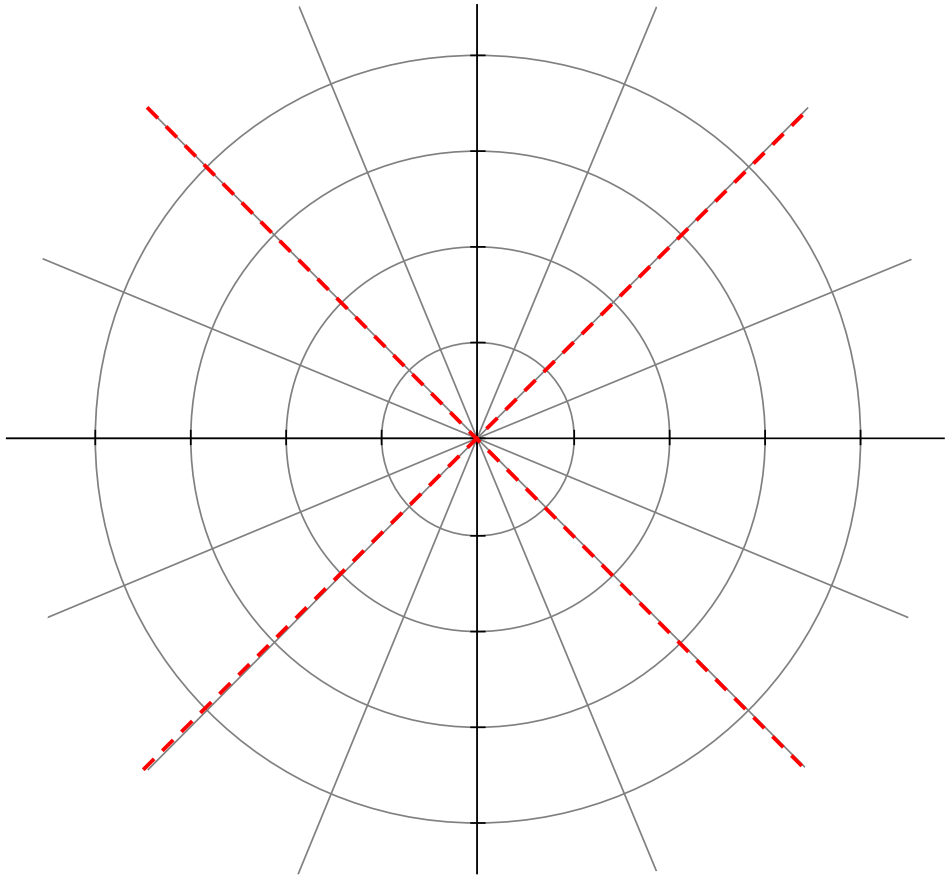
Graph: $r = 1 - 3\cos\theta$



Graph: $r = 3 + 2\sin\theta$



Graph: $r = 3cos3\theta$



POPPER 31

3. $\sum \frac{1}{n}$

4. $\sum \frac{1}{n^2}$

5. $\sum \frac{(-1)^n}{n}$