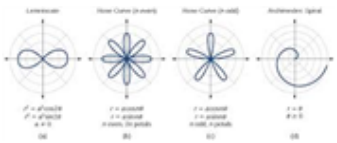
9.1 Polar Coordinates

9-1a: I can plot polar coordinates, including negative angles and radii.

9-1b: Given a polar coordinate, I can write an equivalent coordinate.



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Plotting Points in a Polar Coordinate System

Rectangular Coordinates	Polar Coordinates (Circular Grid)
(x, y)	(r, θ)
x = left/right	r = radius (distance from center)
y = up/down	$\theta =$ angle of rotation

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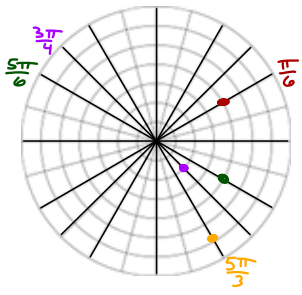
Plotting Polar Coordinates

$\left(4, \frac{\pi}{6}\right)$ $\left(-4, \frac{5\pi}{6}\right)$ $\left(-2, \frac{3\pi}{4}\right)$ $\left(6, \frac{5\pi}{3}\right)$



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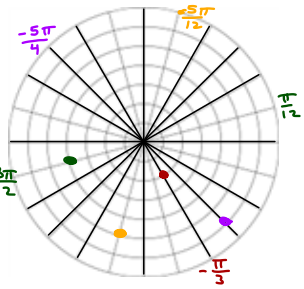
Plotting Polar Coordinates

$\left(2, -\frac{\pi}{3}\right)$ $\left(3, \frac{13\pi}{12}\right)$ $\left(-6, -\frac{5\pi}{4}\right)$ $\left(-5, \frac{5\pi}{12}\right)$



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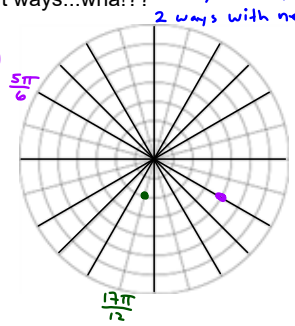
You can write each pair of polar coordinates in 4 different ways...wha!??

2 ways with pos radius
2 ways with neg

$\left(-4, \frac{5\pi}{6}\right)$

$\left(2, \frac{17\pi}{12}\right)$



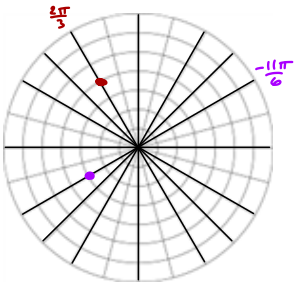
$\left(-4, -\frac{7\pi}{6}\right)$
$\left(4, \frac{11\pi}{6}\right)$
$\left(4, -\frac{\pi}{6}\right)$
$\left(4, \frac{\pi}{6}\right)$

$\left(-2, \frac{5\pi}{12}\right)$
$\left(2, -\frac{7\pi}{12}\right)$
$\left(-2, -\frac{19\pi}{12}\right)$

For each set of polar coordinates, write all equivalent pairs of coordinates.

$\left(4, \frac{2\pi}{3}\right)$

$\left(4, -\frac{4\pi}{3}\right)$
$\left(-4, \frac{5\pi}{3}\right)$
$\left(-4, -\frac{\pi}{3}\right)$



$\left(-3, -\frac{11\pi}{6}\right)$

$\left(-3, \frac{\pi}{6}\right)$
$\left(3, \frac{7\pi}{6}\right)$
$\left(3, -\frac{5\pi}{6}\right)$

Feb 19-7:30 AM