Today: Wrap up 6.6, 6.7 and take a bite out of 6.8.

6.9 is the LAST SECTION !!!!!!

If you had problems with graphing tool on Test 4, let me know.

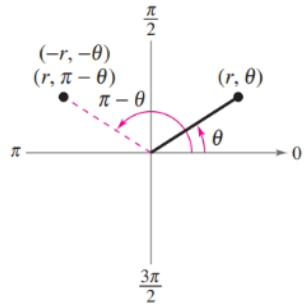
Questions?

Basics of Polar Plots for Calculus.

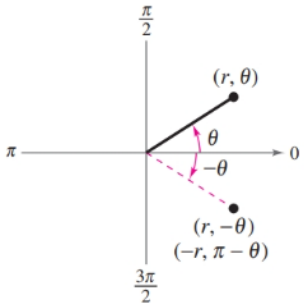
① Plot in Rectangular Coordinates.

② Use ① to build Polar Plot.

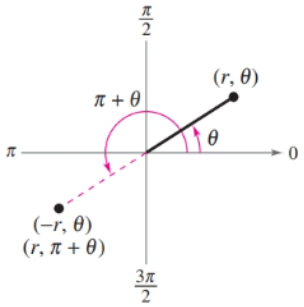
Read & Write Down Symmetry Tests for Polar Plots in §6.8.



Symmetry with Respect to the Line $\theta = \frac{\pi}{2}$



Symmetry with Respect to the Polar Axis



Symmetry with Respect to the Pole

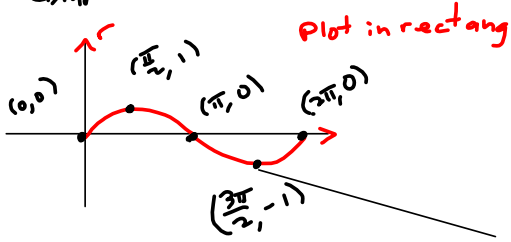
Quick Tests for Symmetry in Polar Coordinates

1. The graph of $r = f(\sin\theta)$ is symmetric with respect to the line $\theta = \frac{\pi}{2}$. → The vertical axis.
2. The graph of $r = g(\cos\theta)$ is symmetric with respect to the polar axis. → The horizontal axis

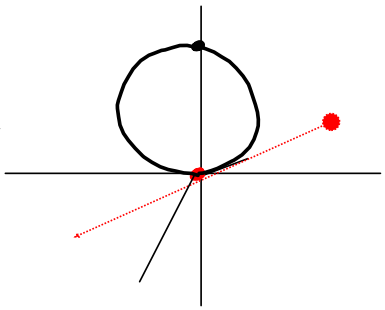
$r = \sin^3\theta + 27\sin\theta = f(\sin\theta)$

$r = 72 - 5\cos\theta = f(\cos\theta)$

Graph $r = \sin\theta$



plot in rectangular



$\frac{\pi}{6}, r = \frac{1}{2}$

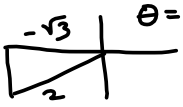
$\frac{\pi}{4}, r = \frac{\sqrt{2}}{2}$

$\frac{\pi}{3}, r = \frac{\sqrt{3}}{2}$

$\frac{\pi}{2}, r = 1$

It's a circle!

$\frac{7\pi}{6}, r = \sin(\frac{7\pi}{6}) = -\frac{1}{2}$

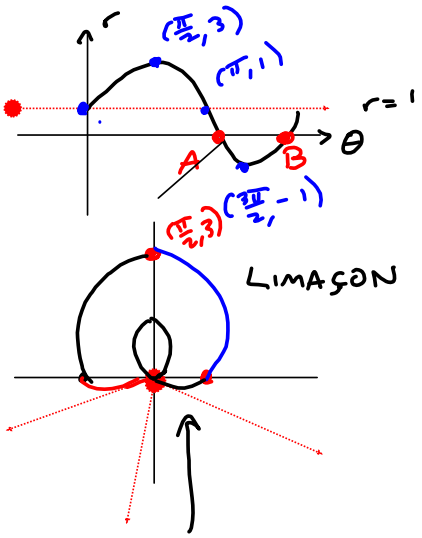


$\theta = \frac{7\pi}{6} = 210°$

$(-\frac{1}{2}, \frac{7\pi}{6}) = (\frac{1}{2}, \frac{\pi}{6})$, because r is negative!

$(-1, \frac{3\pi}{2}) = (1, \frac{\pi}{2})$!

$r = 1 + 2\sin\theta$



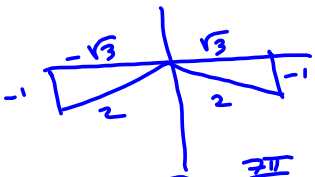
$a=2$, midline $r=1$

Find A & B:

$r = 1 + 2\sin\theta = 0$

$2\sin\theta = -1$

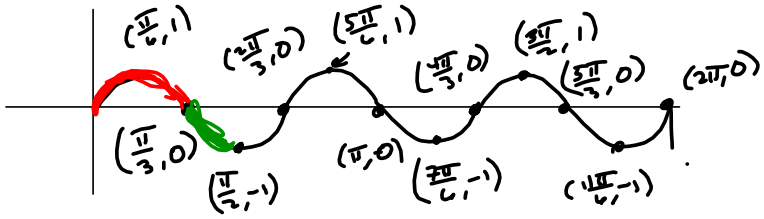
$\sin\theta = -\frac{1}{2}$

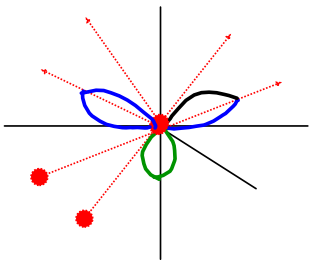


$\Rightarrow \theta = \frac{7\pi}{6}, \frac{11\pi}{6}$

arcsine will give you $-30^\circ = -\frac{\pi}{6}$

$r = \sin(3\theta)$ $\quad 3\theta = 2\pi \Rightarrow$ Period $= \frac{2\pi}{3}$





3-petal rose!