Remember HW Key is online.
GHW#14 is due Friday.
End of Ch 9 Quiz next Monday.

Try the 3 question warm-up.
You need your calculator today and polar graph paper for hw.

zh777fl
Join Classroom:
1st period: Justin, Calvin
2nd per.: Jessica, Amory, Tristan
6-7 per.: Dylan B., Michael, Kelise

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Graphing Polar Equations

PreCalc
Ch 9 Day 5

$12 \div 6 = 2$

Warm-Up.

1. Plot the point and name it 4 ways (3 additional).

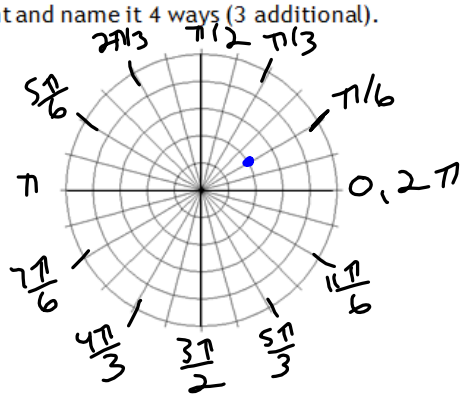
(r, θ)

$\left(2, \frac{\pi}{6}\right)$

$(2, -\frac{11\pi}{6})$

$(-2, \frac{7\pi}{6})$

$(-2, -\frac{5\pi}{6})$



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$(r,\theta) \to (x,y)$

2. Convert: Polar to Rectangular

$\left(2, \frac{3\pi}{4}\right)$ — II

$x = r\cos\theta$

$x = 2\cos\frac{3\pi}{4}$

$x = 2\left(-\cos\frac{\pi}{4}\right)$

$x = \frac{2}{1}\left(-\frac{\sqrt{2}}{2}\right)$

$x = -\sqrt{2}$

$y = r\sin\theta$

$y = 2\sin\frac{3\pi}{4}$

$y = 2\left(+\sin\frac{\pi}{4}\right)$

$y = 2\left(\frac{\sqrt{2}}{2}\right)$

$y = \sqrt{2}$

$\left(-\sqrt{2}, \sqrt{2}\right)$

	$\pi/6$	$\pi/4$	$\pi/3$
~~sin~~	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$
cos	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$
tan	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$

$(x,y) \to (r,\theta)$

3. Convert: Rectangular to Polar

$(x,y) \to (r,\theta)$

$(\sqrt{3}, -1) =$ — IV

$r = \sqrt{x^2+y^2}$

$r = \sqrt{(\sqrt{3})^2+(-1)^2}$

$r = \sqrt{4}$

$r = 2$

$\tan\theta = \frac{y}{x}$

$\tan\theta = \frac{-1}{\sqrt{3}}$

$\tan\theta = -\frac{\sqrt{3}}{3}$

$\alpha = \pi/6$

$\theta_{IV} = \frac{11\pi}{6}$

$\left(2, \frac{11\pi}{6}\right)$

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Graph:

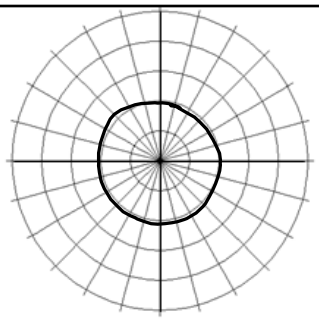
1. $r = 2$

θ is all values

$r = \sqrt{x^2+y^2}$

$(\sqrt{x^2+y^2})^2 = (2)^2$

$x^2+y^2 = 4$ Cyl



2. $\theta = \frac{\pi}{6}$

r = all values $12 \div 6 = 2$

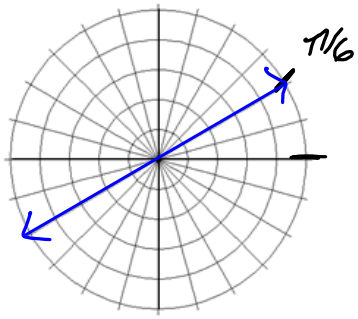


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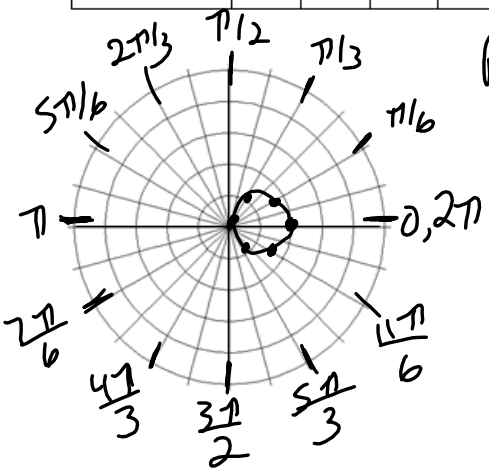
Table: 2nd tblset (window), start=0, Δtbl = π/6

6. $r = 2\cos\theta$ Radian + Polar mode

1.57 3.14 4.71 6.28

θ	0	π/6	π/3	π/2	2π/3	5π/6	π	7π/6	4π/3	3π/2	5π/3	11π/6	2π
r = f(θ) r = 2cosθ	2	1.73	1	0	-1	-1.73	-2	-1.73	-1	0	1	1.73	2



Polar Window

θ : [0, 2π], π/24

X : [-6.4, 6.4], 0

Y : [-4.6, 4.6], 0

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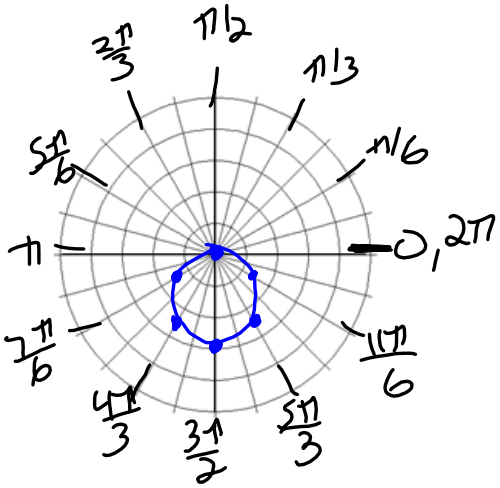
7. $r = -3\sin\theta$

0 1.57 3.14 4.71 6.28

θ	0	π/6	π/3	π/2	2π/3	5π/6	π	7π/6	4π/3	3π/2	5π/3	11π/6	2π
r = f(θ) r = -3sinθ	0	-1.5	-2.60	-3	-2.60	-1.5	0	1.5	2.60	3	2.60	1.5	0



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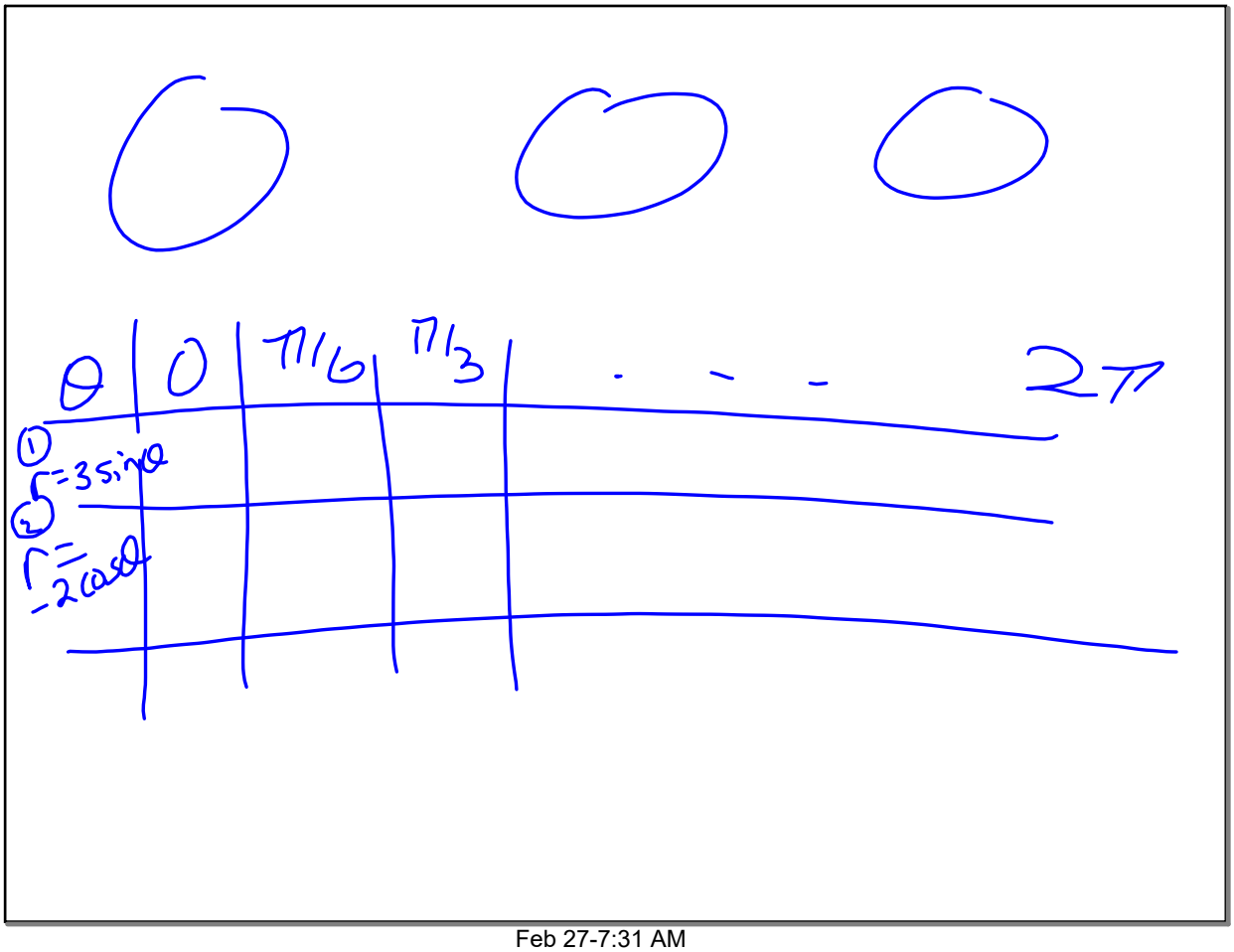

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