

Handout Math 48C Mitchell Schoenbrun Lesson 12 Polar Coordinates

Convert these Cartesian coordinates to polar

$$(2,2)$$

$$(0,-5)$$

$$(\sqrt{3},2)$$

$$(5,2)$$

Convert these polar coordinates to Cartesian

$$(2,0)$$

$$(2, \pi)$$

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

$$(0.5, 1)$$

Try graphing the following on a graphic calculator and draw the result:

1) $r = \sin \theta \cos^2 \theta$ - bifolium

2) $r = (\cos \theta - 1)$ - Cardioid

3) $r = \sin \theta \tan \theta$ - Cissoïd of Diocles

4) $r = \frac{\sin(\theta)}{\theta}$ - Cochleïd (Oui-Ja board curve)

5) $r = \csc \theta + 1$ - Conchoid of Nicomedes

6) $\frac{3 \sin \theta \cos \theta}{\sin^3 \theta + \cos^3 \theta}$ - Folium of Descartes

7) $r = \pm \sqrt{\cos 2\theta}$ - Lemniscate of Bernoulli, Two-leaved rose

8) $r = \sin 2\theta$

9) $r = \pm \frac{1}{\sqrt{\theta}}$ - Lituus

10) $r = \sin 3\theta$ - Three leaved