

MA 114 Worksheet #23: Polar coordinates

- Convert from rectangular to polar coordinates:
 - $(1, \sqrt{3})$
 - $(-1, 0)$
 - $(2, -2)$
- Convert from polar to rectangular coordinates:
 - $(2, \frac{\pi}{6})$
 - $(-1, \frac{\pi}{2})$
 - $(1, -\frac{\pi}{4})$
- List all the possible polar coordinates for the point whose polar coordinates are $(-2, \pi/2)$.
- Sketch the graph of the polar curves:
 - $\theta = \frac{3\pi}{4}$
 - $r = \pi$
 - $r = \cos \theta$
 - $r = \cos(2\theta)$
 - $r = 1 + \cos \theta$
 - $r = 2 - 5 \sin \theta$
- Find the equation in polar coordinates of the line through the origin with slope $\frac{1}{3}$.
- Find the polar equation for:
 - $x^2 + y^2 = 9$
 - $x = 4$
 - $y = 4$
 - $xy = 4$
- Convert the equation of the circle $r = 2 \sin \theta$ to rectangular coordinates and find the center and radius of the circle.
- Find the distance between the polar points $(3, \pi/3)$ and $(6, 7\pi/6)$.