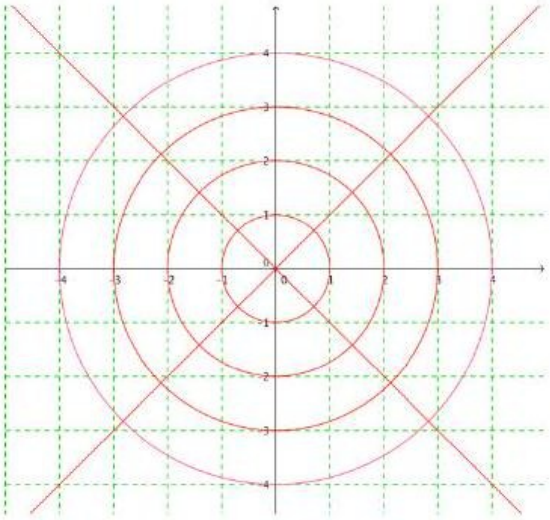
Math 1060 ~ Trigonometry

17 Polar Coordinates and Equations

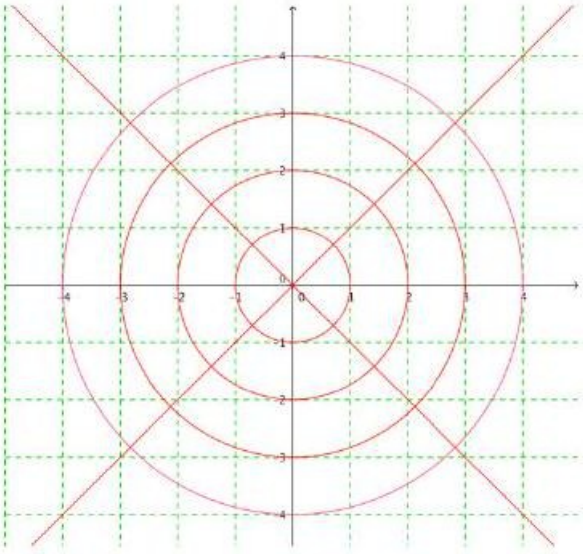
Rectangular Coordinates

(x, y)

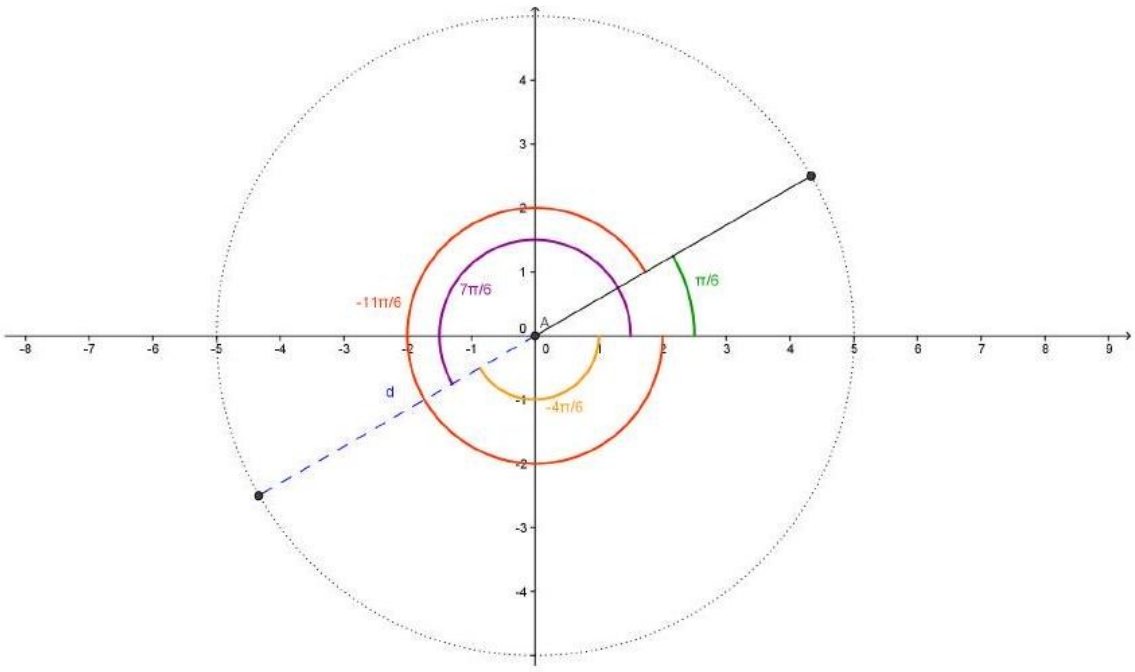


Polar Coordinates

(r, θ)

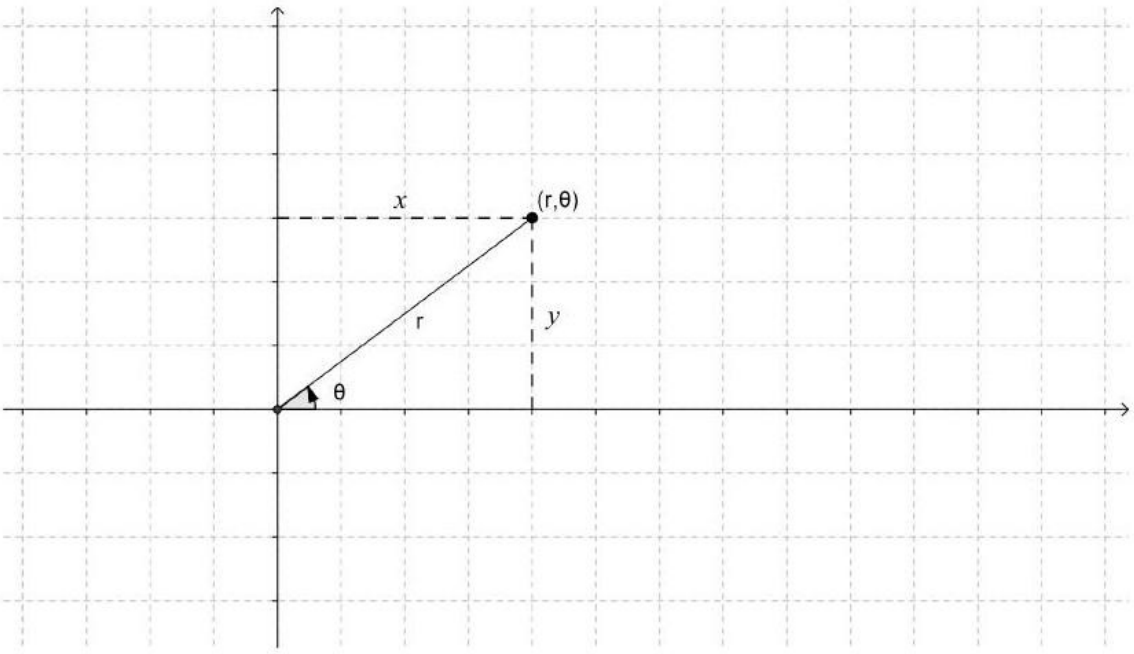


In fact:
(r, θ) has infinitely many representations:
$(r, \theta + 2n\pi)$ and $(-r, \theta + (2n+1)\pi)$, where n is any integer



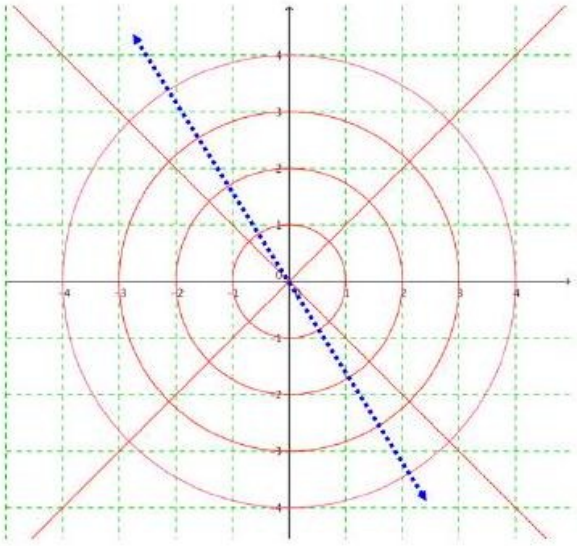
How do we translate between Cartesian and polar coordinates?

Polar to Cartesian:



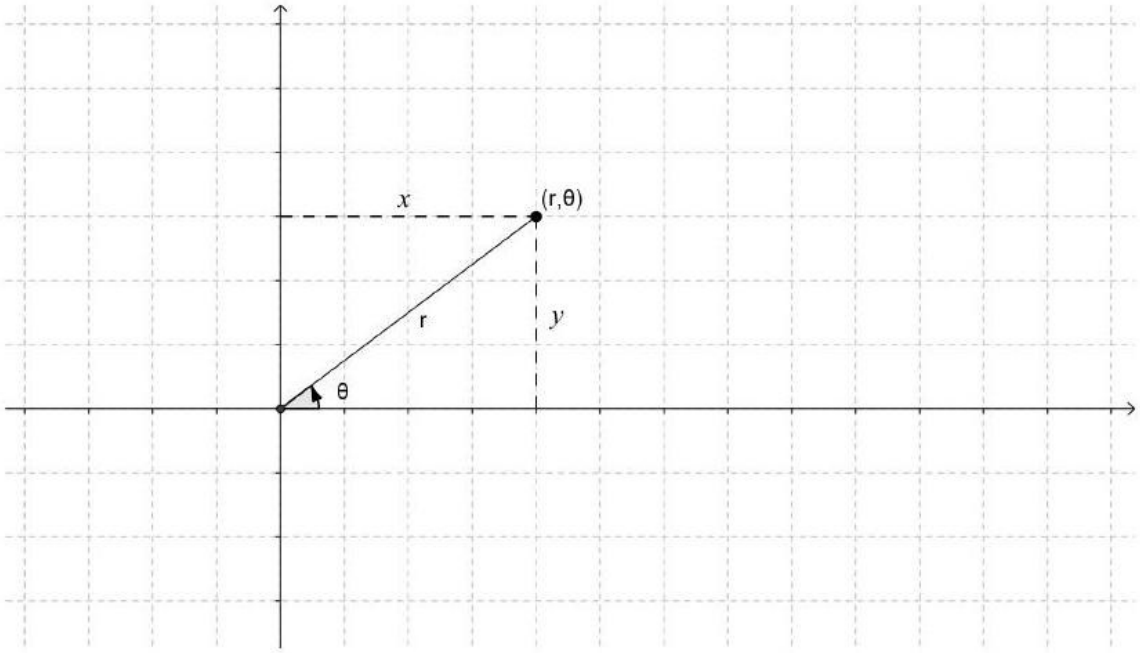
EX 1

Convert $(-4, 2\pi/3)$ to Cartesian coordinates.



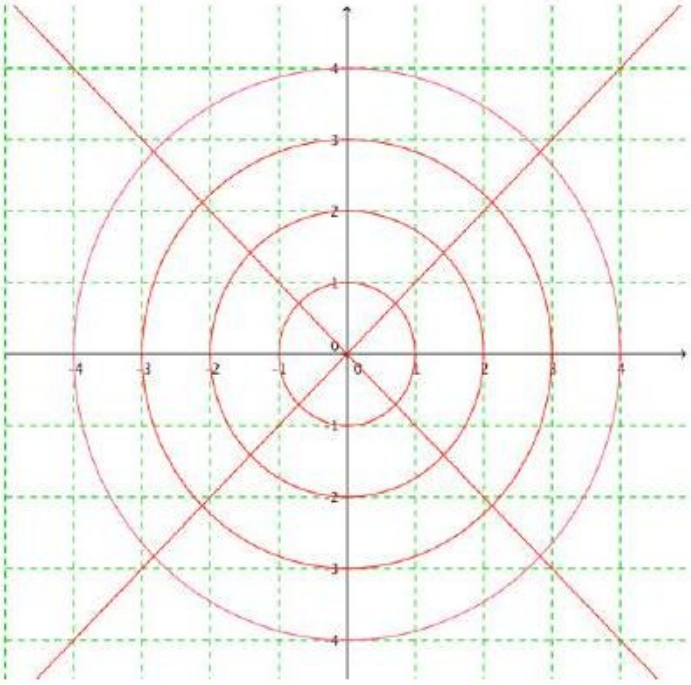
How do we translate between Cartesian and polar coordinates?

Cartesian to polar:



EX 2

Convert $(-2,2)$ to polar coordinates.



We can convert equations, too!

EX 3

(a) Convert $x^2 - 3x = 1 + xy$ into polar coordinates.

(b) Convert $r = -2\cos\ \theta$ into Cartesian coordinates.