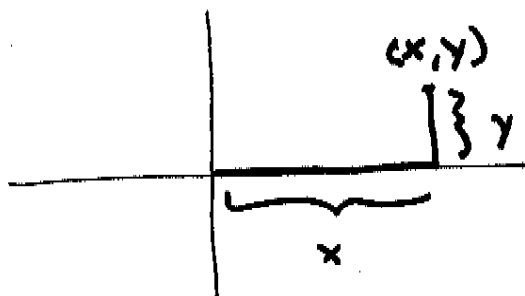


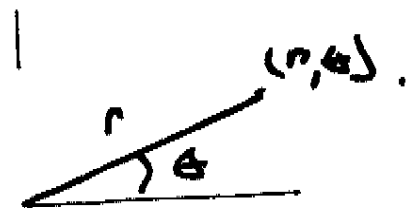
10.3.
1/2

10.3: Polar Coordinates

Cartesian coords



polar coords



Ex1: Plot the polar point $(2, \frac{3\pi}{4})$ & find two other coords of this point. ($r < 0$ & $\theta < 2\pi$).

Ex2: Find the cartesian coords of $(r, \theta) = (-2, -5\pi/6)$.

Ex3: sketch the region $2 < r \leq 5$ and $\frac{3\pi}{4} < \theta < \frac{5\pi}{4}$

To convert $x = r \cos \theta$, $y = r \sin \theta$, $\tan \theta = \frac{y}{x}$
and $r^2 = x^2 + y^2$

Ex4: convert $r = 2 \sin \theta + 4 \cos \theta$ to a cart. eqn.

$$\Rightarrow r^2 = 2r \sin \theta + 4r \cos \theta$$

$$\Rightarrow x^2 - 2x + y^2 - 4y = 0$$

$$\Rightarrow (x-1)^2 + (y-2)^2 = 5$$

