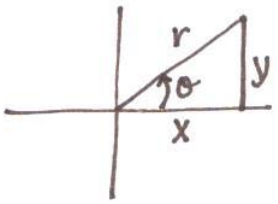
Review of Polar Coordinates (Section 7.1: Polar Packet)

* Polar Coordinates: (r, θ)

  Rectangular Coordinates: (x, y)

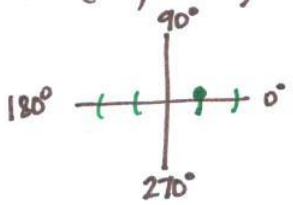
* From Polar to Rectangular: $x = r\cos\theta$ and $y = r\sin\theta$

  From Rect. to Polar: $r^2 = x^2 + y^2$ or $r = \sqrt{x^2+y^2}$ and $\theta = \tan^{-1}(y/x)$

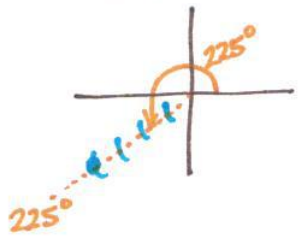


Also... $\tan\theta = y/x$, $\cos\theta = x/r$, $\sin\theta = y/r$

#4 $(-1, 180^\circ)$ — go opp direction



#14 $(4, 225^\circ) \rightarrow$ $(4, -135^\circ)$, $(-4, 45^\circ)$, $(-4, -315^\circ)$ } All land in the same location!



#20 $(3, 80^\circ) \rightarrow$ Rect. Coor.: $(.521, 2.954)$

$x = 3\cos 80^\circ$

$y = 3\sin 80^\circ$

#26 $(-2, -2) \rightarrow$ Polar Coor: $(\sqrt{8}, 45^\circ)$

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

$r = \sqrt{8}$

$\theta = \tan^{-1}(-2/-2)$

$\theta = 45^\circ$

#30 $x^2+y^2=49$ → circle w/radius = 7

$r^2=49$

$\boxed{r=\pm 7}$

circle w/radius = 7

#34 $r=-6\cos\theta$

$r\cdot r=-6(x/r)\cdot r$

$r^2=-6x$

$\boxed{x^2+y^2=-6x}$

#43 $r=6\tan\theta\cdot\sec\theta$

$r=6(y/x)(r/x)$

$r=\frac{6yr}{x^2}$

$rx^2=6yr$

$\boxed{x^2=6y}$