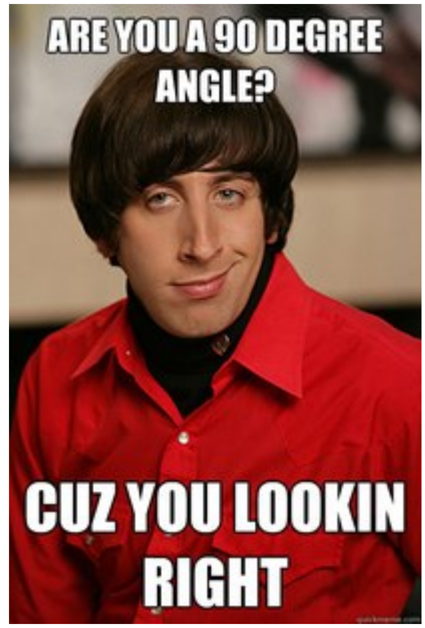
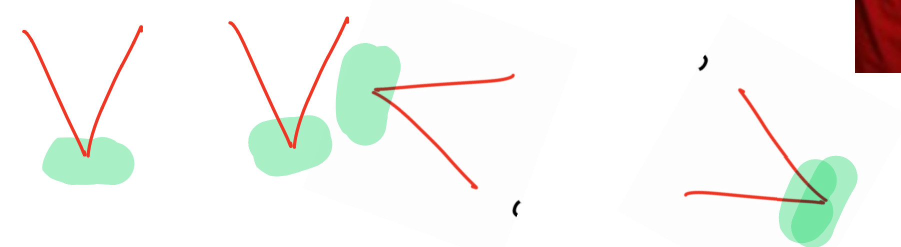
Angles in Standard Position

We traditionally use the greek letters, Theta (θ), Phi (ϕ), and Beta (β) instead of x, y, and z when talking about angles.

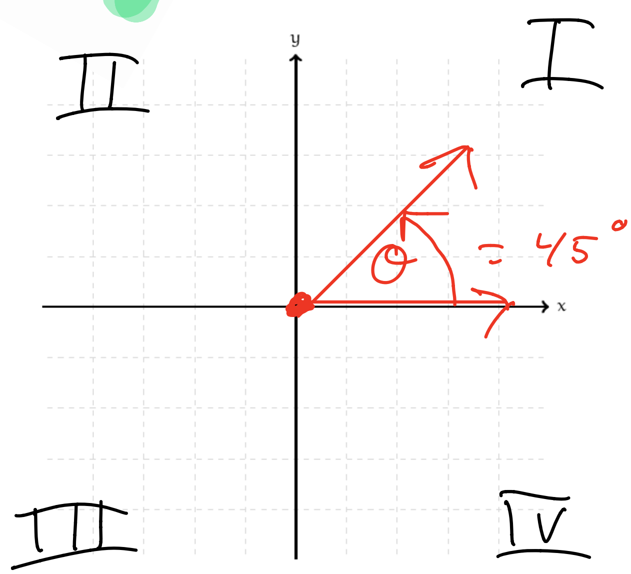


We define angles $< 90^\circ$ as acute, angles $= 90^\circ$ as right, and angles $> 90^\circ$ as obtuse.

If angles are allowed to be in any position they can be difficult to work with. As such, mathematicians have defined a standard position for every angle. This works because moving the angle does not change its value.

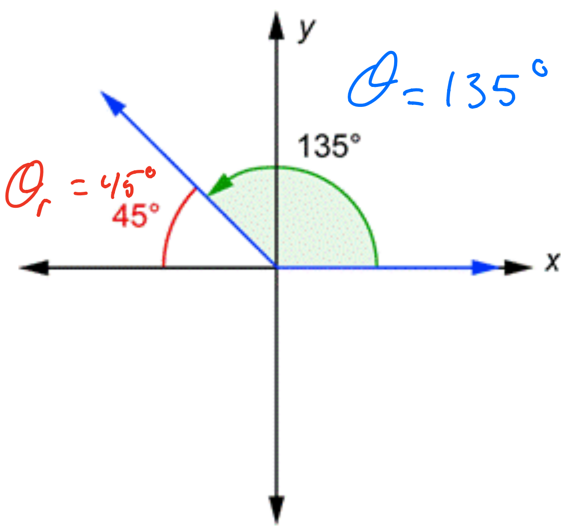


Angles are placed with the vertex at the origin and the angle is measured to be positive as we move counter clockwise.



The cartesian plane is divided into 4 quadrants with #1 being where both x and y are positive. The number of the quadrant then increases in the same counter clockwise direction.

The good news is that angles maintain their properties regardless of their respective quadrant. This means that we can always measure an angle to the closest x-axis. All that will change is the sign value when we take trig functions of the angles (sine, cosine, tangent...).

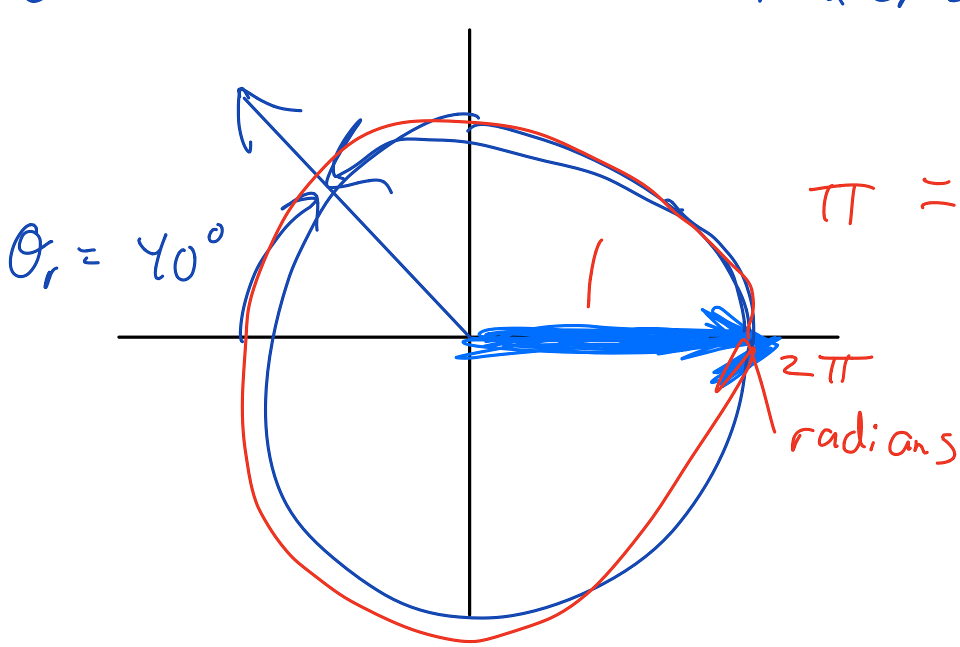


The angle, $\theta = 135°$ is measured from the origin to the terminal arm.

The reference angle is $\theta_r = 45°$ and it is measured to the closest x-axis.

Find the reference angle (θ_r) for the following angles (θ).

$\theta =$	20^o,	160^o,	200^o,	340^o,	108^o,	337^o,	500^o
θ_r	$\theta_r = 20°$	$\theta_r = 20°$	$\theta_r = 20°$	$\theta_r = 20°$	$\theta_r = 72$	$\theta_r = 23°$	

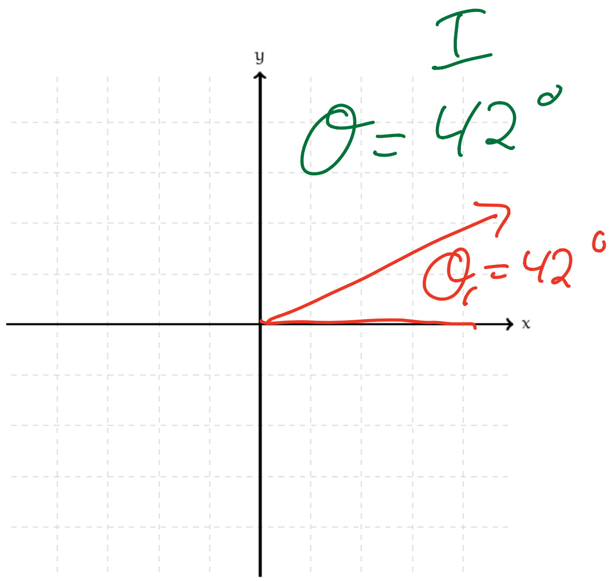


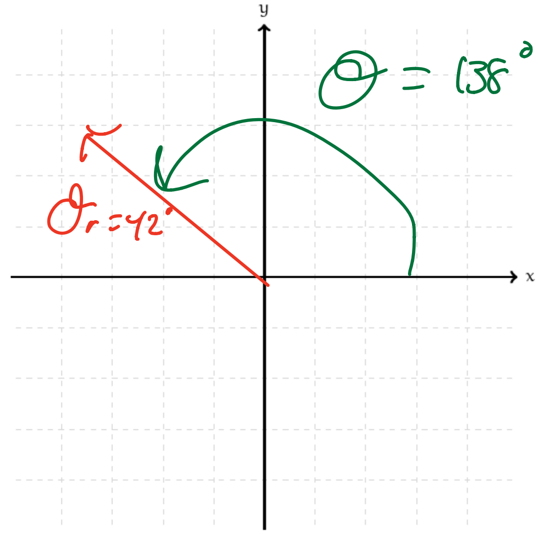
$$\pi = \frac{C}{d}$$

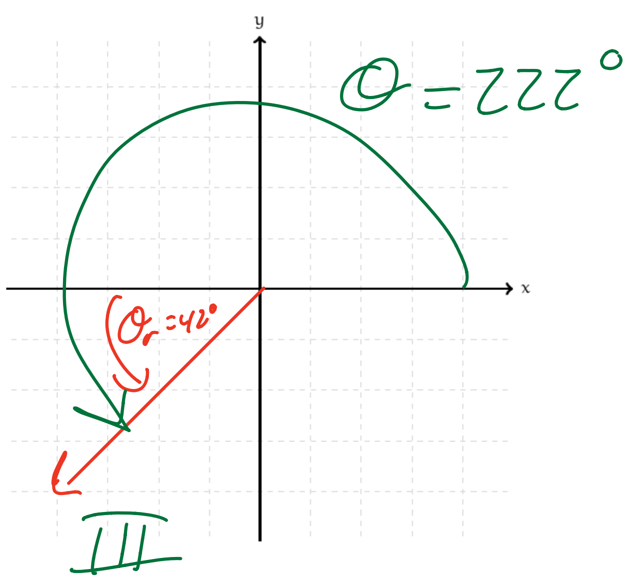
$$\pi = \frac{C}{2}$$

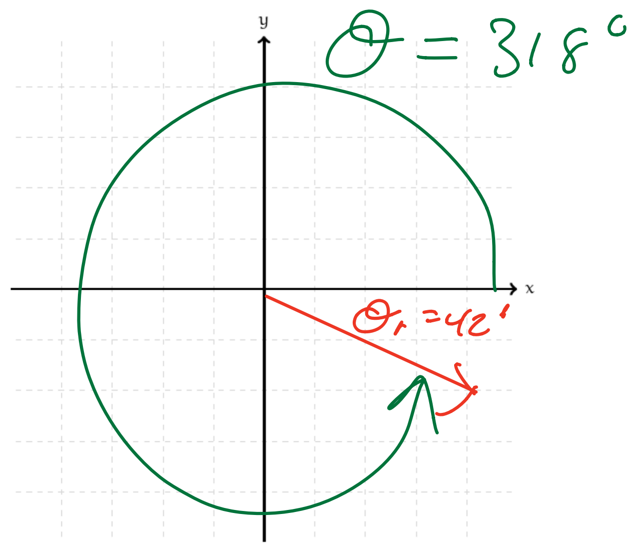
$$2\pi = c$$

Determine the 3 other angles in standard position $0^\circ \leq \theta \leq 360^\circ$ that have a reference angle of 42°.









HW: 2.1
1-8, 11, 13