

The terminal side of  
the angle here is  $r$   
(1, 2)

We'll worry about  
the length of  $r$  and  
the  $x$  and  $y$   
coordinates later

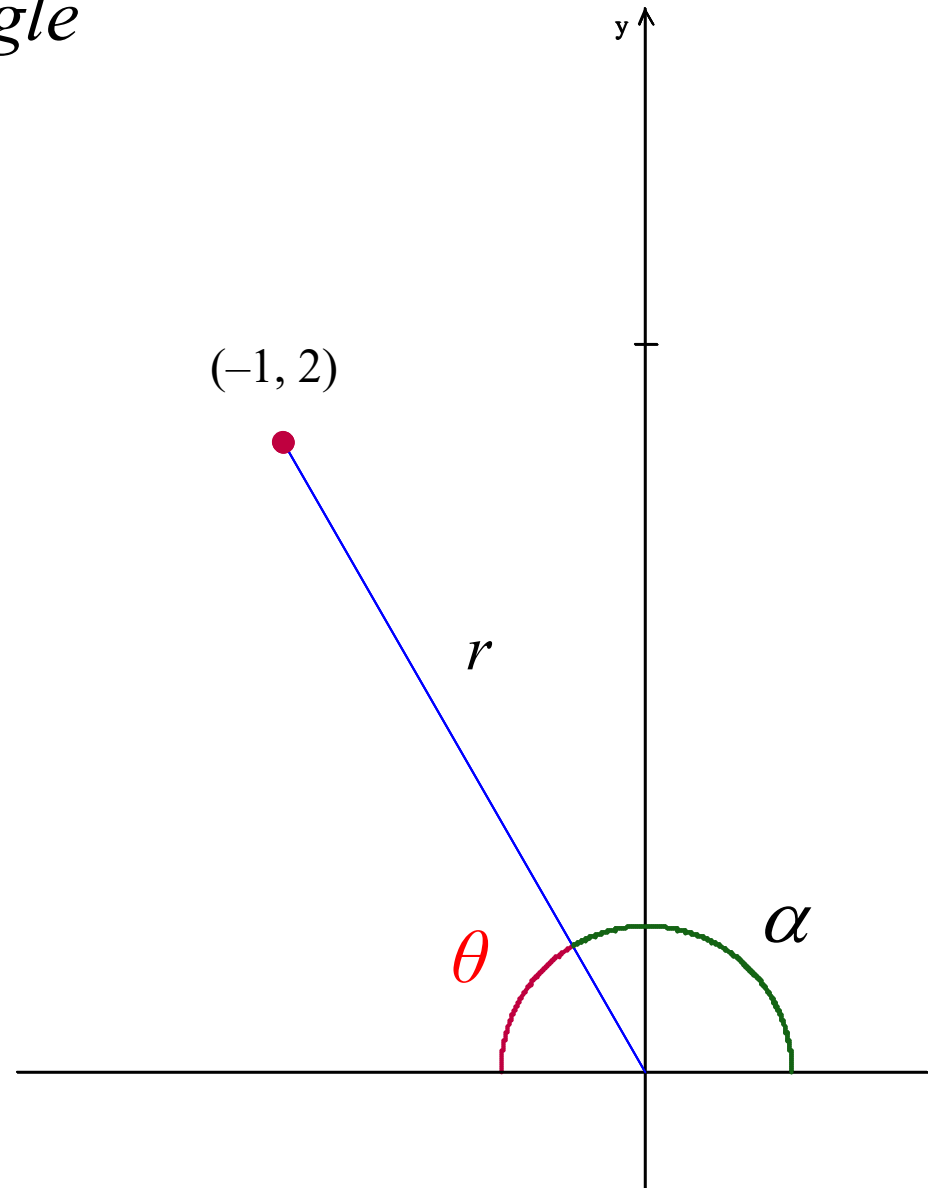
Starting  $\alpha$  from the positive  $x$ -  
axis is called Standard Position

$\theta$  is called the *reference angle*

*reference angle*

The acute angle  
made between the  
terminal side ( $r$ )  
and the  $x$ -axis

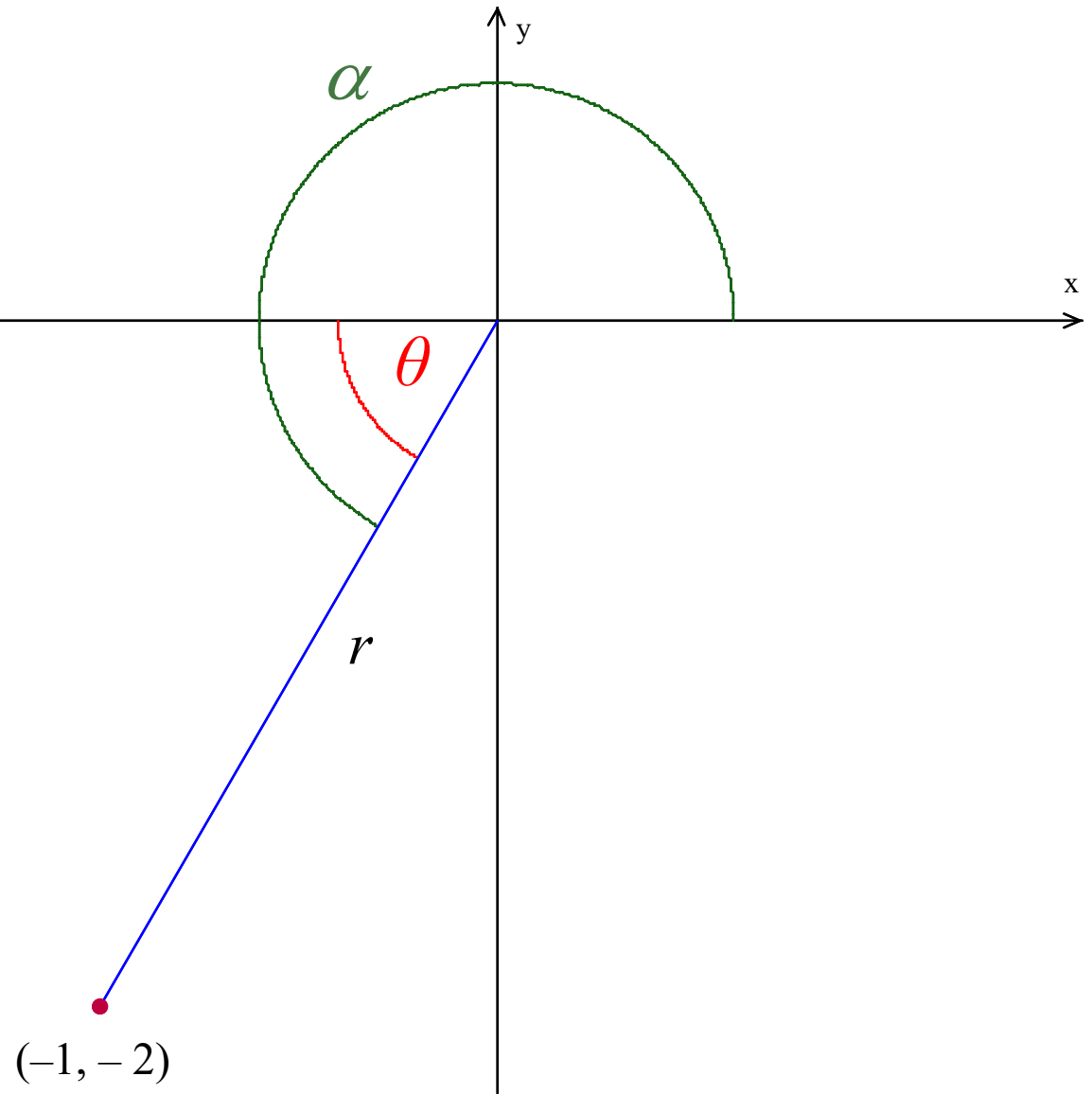
More on this later



$\theta$  is called the *reference angle*

*reference angle*

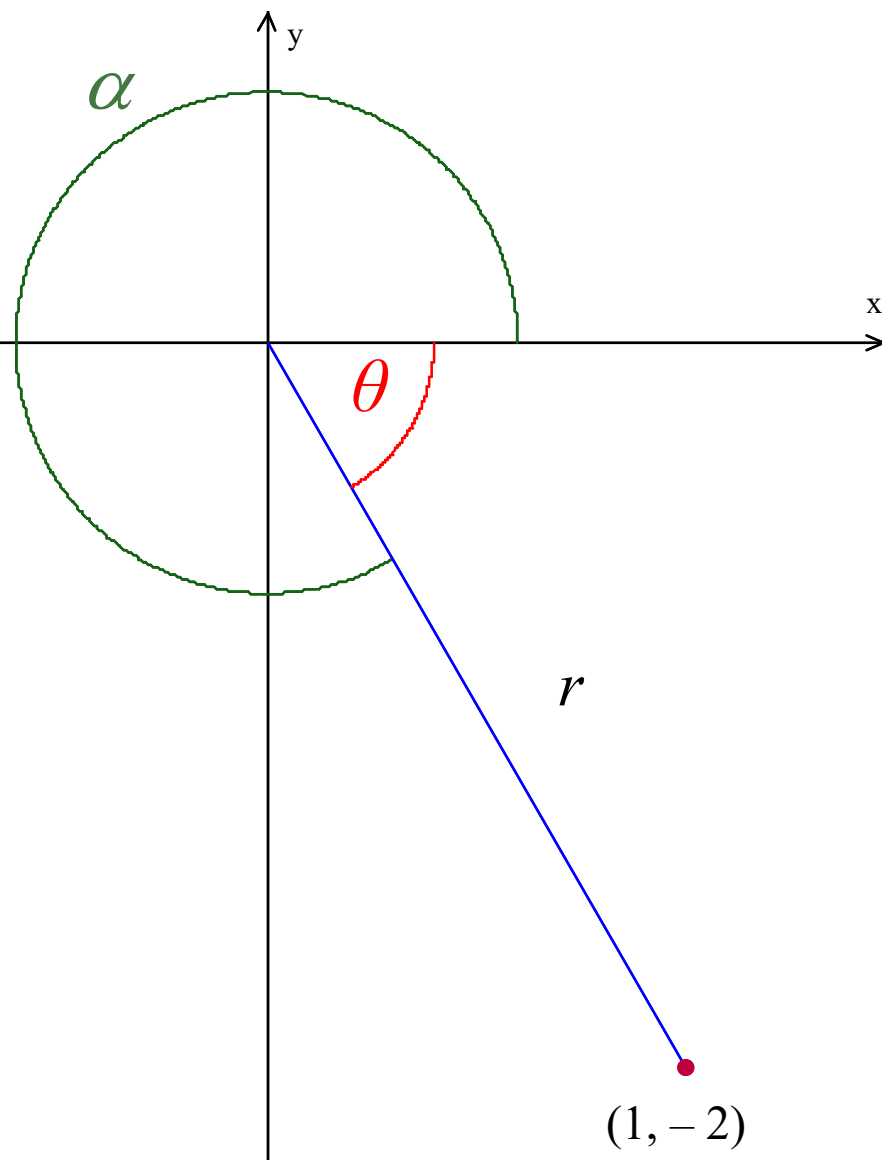
The acute angle  
made between the  
terminal side ( $r$ )  
and the  $x$ -axis



$\theta$  is called the *reference angle*

*reference angle*

The acute angle  
made between the  
terminal side ( $r$ )  
and the  $x$ -axis

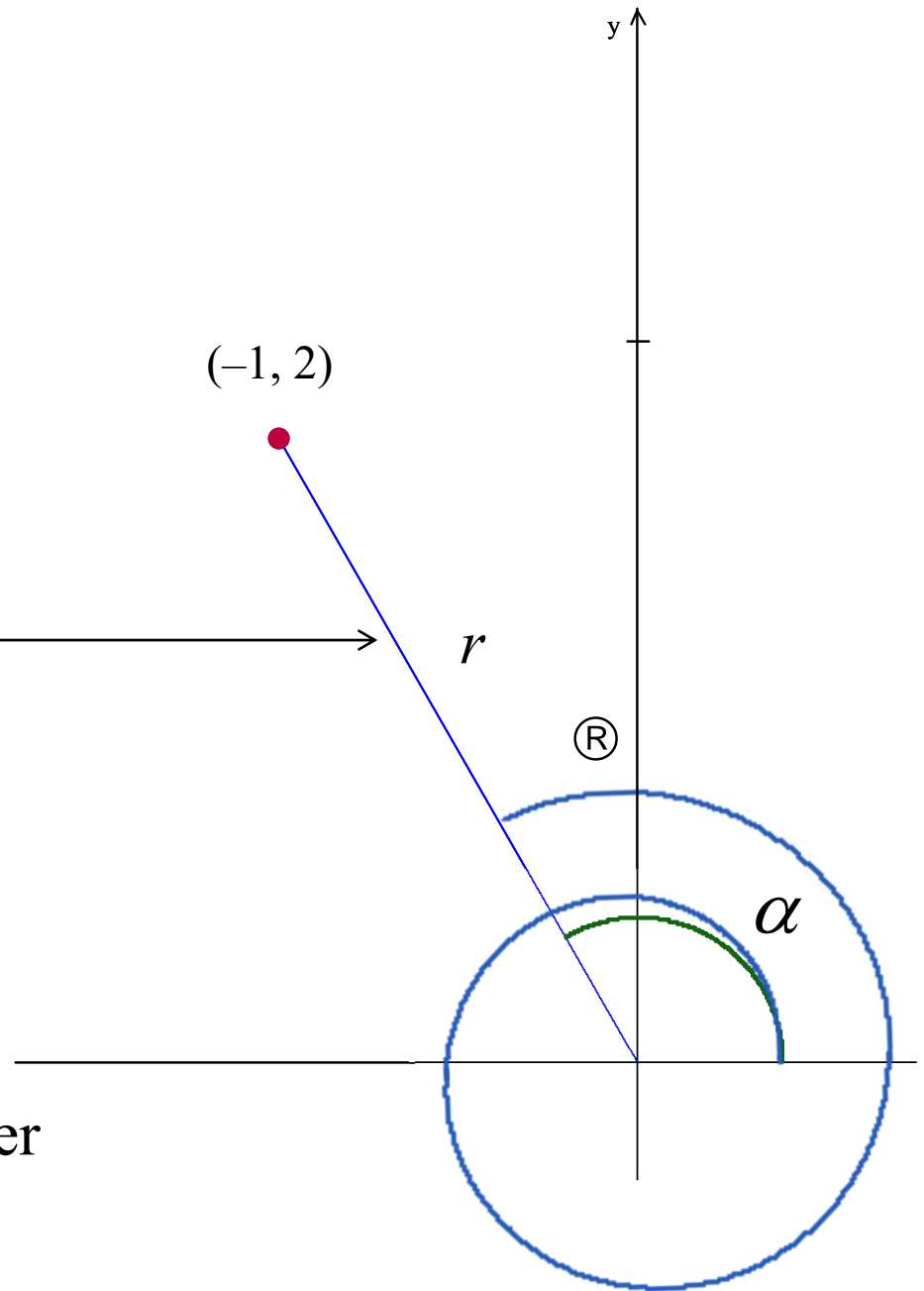


## Co-terminal angles

Angles that have  
the same initial and  
terminal sides

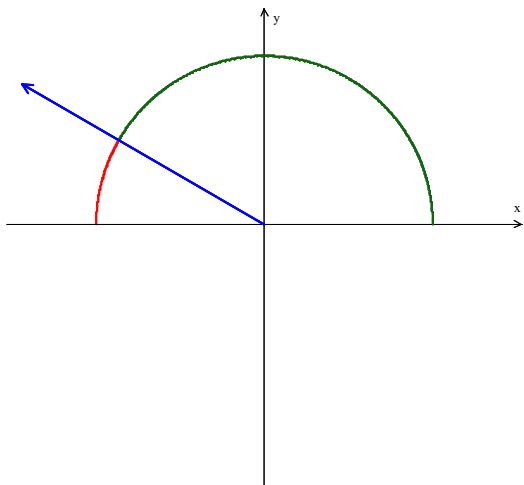
$\alpha$  and  $\textcircled{R}$  are  
examples of co-  
terminal angles.

Co-terminal angles always differ  
by multiples of  $360^\circ$

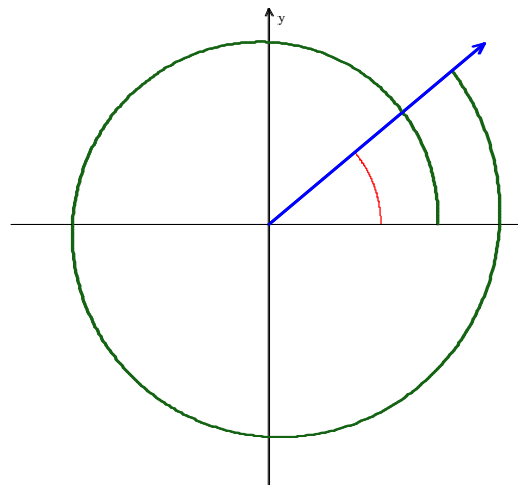


Draw the given angles on the  $x$ - $y$  plane

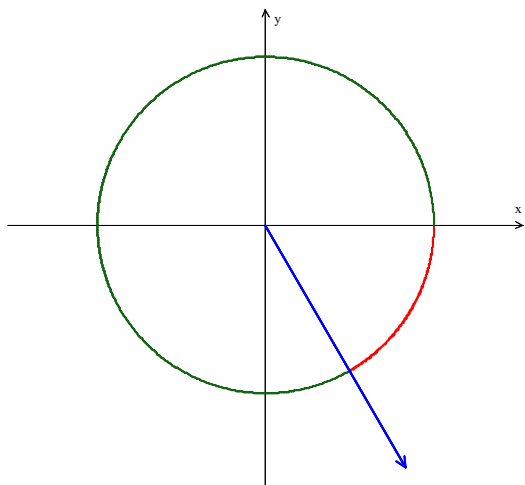
$150^\circ$  reference angle =  $30^\circ$



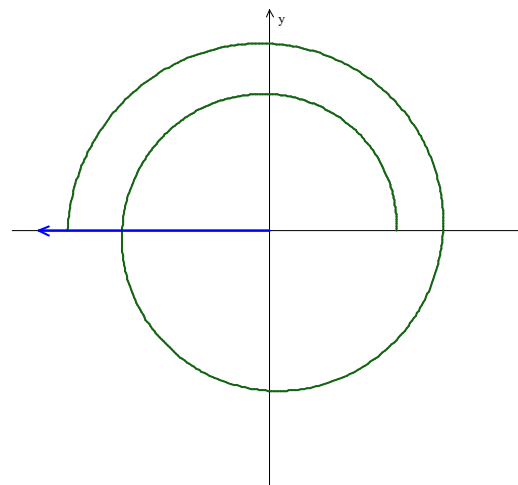
$400^\circ$  reference angle =  $40^\circ$



$300^\circ$  reference angle =  $60^\circ$

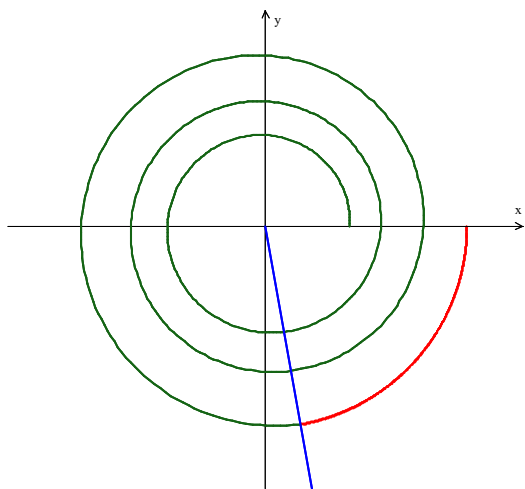


$540^\circ$  reference angle =  $0^\circ$

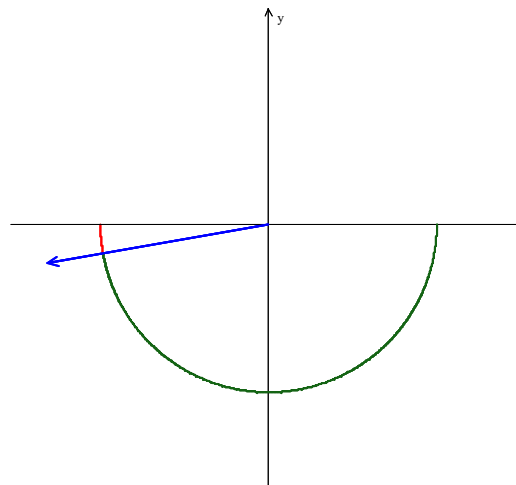


Draw the given angles on the  $x$ - $y$  plane

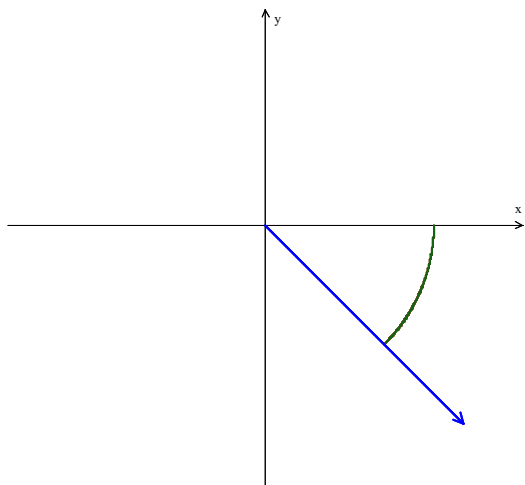
$1000^\circ$  reference angle =  $80^\circ$



$-170^\circ$  reference angle =  $10^\circ$



$-45^\circ$  reference angle =  $45^\circ$



$-250^\circ$  reference angle =  $70^\circ$

