convert Cartesian coordinates (X,Y)

to

0 to 360 degrees

NOTE! ATAN2() as used herein is the standard definition[1].   Some software, notably Microsoft Excel, reverses the order of the arguments.

counterclockwise from +X axis: (180/pi)*ATAN2(-Y,-X) + 180

counterclockwise from -X axis: (180/pi)*ATAN2(Y, X) + 180

counterclockwise from +Y axis: (180/pi)*ATAN2(X,-Y) + 180

counterclockwise from -Y axis: (180/pi)*ATAN2(-X, Y) + 180

clockwise from +X axis: (180/pi)*ATAN2(Y,-X) + 180

clockwise from -X axis: (180/pi)*ATAN2(-Y, X) + 180

clockwise from +Y axis: (180/pi)*ATAN2(-X,-Y) + 180

clockwise from -Y axis: (180/pi)*ATAN2(X, Y) + 180
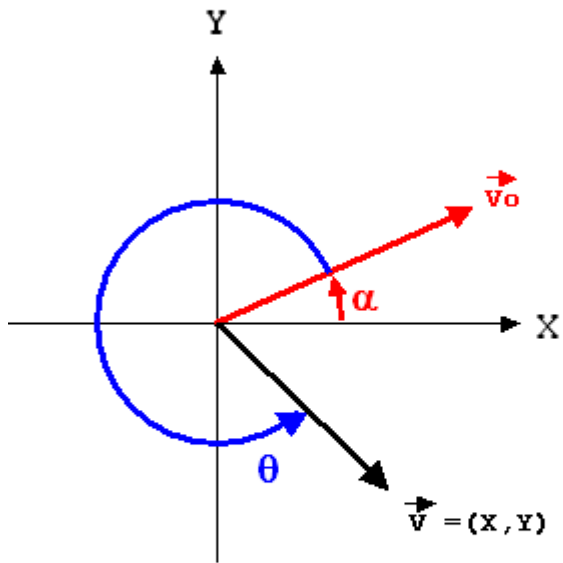
[1] http://en.wikipedia.org/wiki/Atan2#Definition

The following diagram shows the general case for angles measured clockwise or counterclockwise from an arbitrary initial ray Vo:

θ counterclockwise
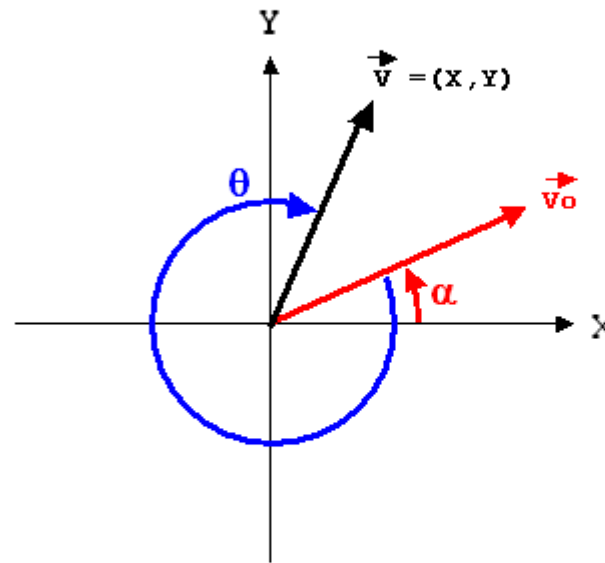
from $\vec{Vo}$ to $\vec{V}$

0 to 360 degrees

$\theta = (180/\pi)(\text{ATAN2}(y,x) - \alpha)$

$\theta -= 360*\text{floor}(0.5+\theta/360)^{[1]}$

θ clockwise

from $\vec{Vo}$ to $\vec{V}$

0 to 360 degrees

$\theta = (180/\pi)(\text{ATAN2}(-y,x) + \alpha)$

$\theta -= 360*\text{floor}(0.5+\theta/360)^{[1]}$

[1] if α is in [0,360] you can use this instead: if$(\theta<0)$ $\theta += 360$