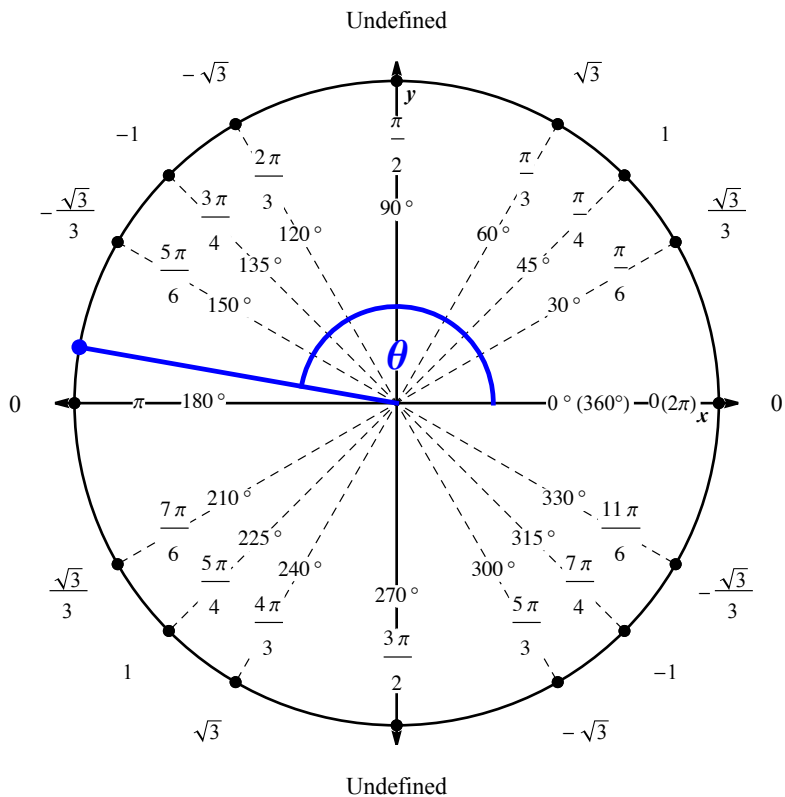
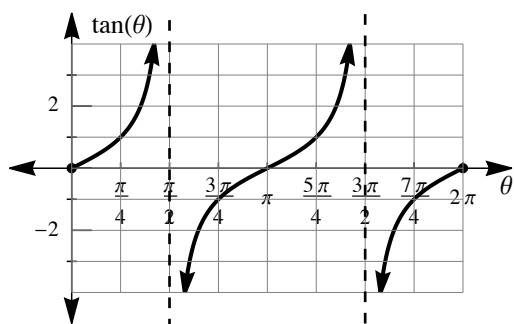


## Trigonometry 20: The Graph of $\tan(\theta)$

Imagine doing the walk around the unit circle again, but this time think about what is happening to the values of  $\tan \theta$  (your  $y$ -coordinate values divided by your  $x$ -coordinate values). What would sketch of  $f(\theta) = \sin(\theta)$  look like if we graphed it?



For one complete walk around the circle (one revolution), here is a graph of the tangent values (notice the vertical asymptotes where there is division by zero):



Of course we could keep walking in the counterclockwise direction and  $\theta$  would continue to grow. And if we started at  $(1, 0)$  where  $\theta = 0$  and walked clockwise (backwards), the  $\theta$  values would be negative: the angle  $\theta$  can be any real number and the full graph of  $f(\theta) = \tan(\theta)$  looks like:

