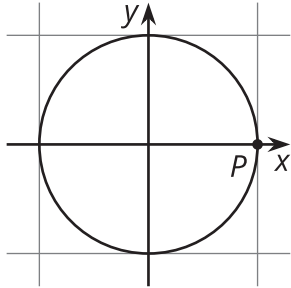


Unit 6 Lesson 9: Introduction to Trigonometric Functions

1 An Angle and a Circle (Warm up)

Student Task Statement

Suppose there is a point P on the unit circle at $(1, 0)$.

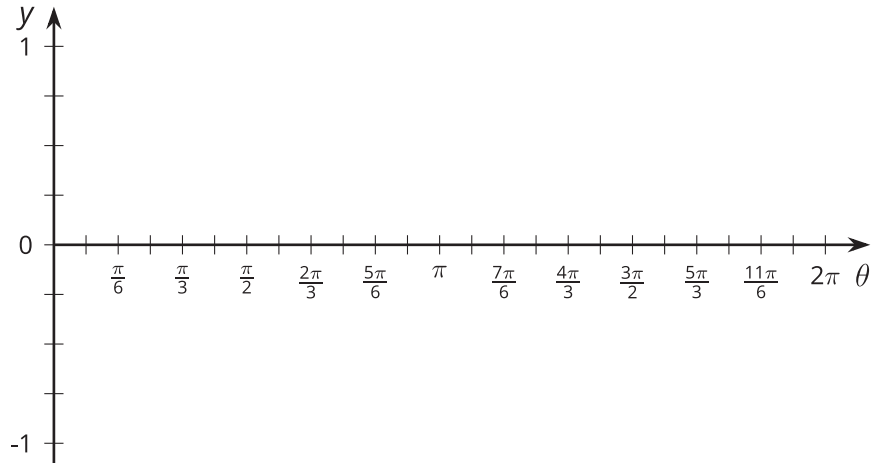


1. Describe how the x -coordinate of P changes as it rotates once counterclockwise around the circle.
2. Describe how the y -coordinate of P changes as it rotates once counterclockwise around the circle.

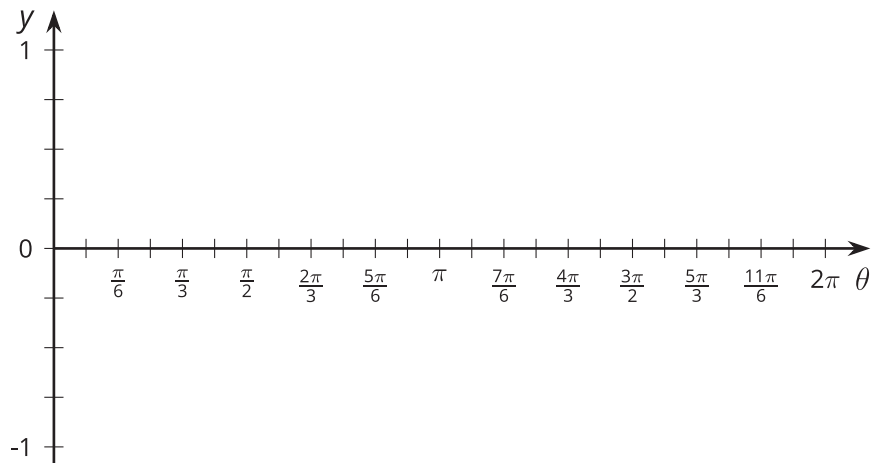
2 Do the Wave

Student Task Statement

1. For each tick mark on the horizontal axis, plot the value of $y = \cos(\theta)$, where θ is the measure of an angle in radians. Use the class display of the unit circle, the unit circle from an earlier lesson, or technology to estimate the value of $\cos(\theta)$.



2. For each tick mark on the horizontal axis, plot the value of $y = \sin(\theta)$. Use the class display of the unit circle, the unit circle from an earlier lesson, or technology to estimate the value of $\sin(\theta)$.



3. What do you notice about the two graphs?
4. Explain why any angle measure between 0 and 2π gives a point on each graph.

5. Could these graphs represent functions? Explain your reasoning.

3 Graphs of Cosine and Sine

Student Task Statement

1. Looking at the graphs of $y = \cos(\theta)$ and $y = \sin(\theta)$, at what values of θ do $\cos(\theta) = \sin(\theta)$?
Where on the unit circle do these points correspond to?
2. For each of these equations, first predict what the graph looks like, and then check your prediction using technology.
 - a. $y = \cos(\theta) + \sin(\theta)$
 - b. $y = \cos^2(\theta)$
 - c. $y = \sin^2(\theta)$
 - d. $y = \cos^2(\theta) + \sin^2(\theta)$

Images for Activity Synthesis

