

Quick Hit 9

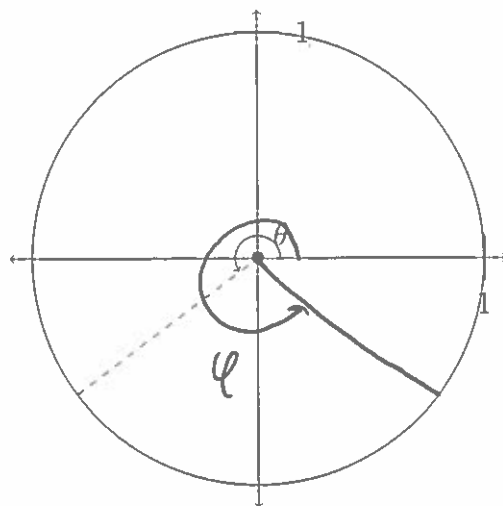
1. For the following questions, use the graph to the right. The light grid lines are in increments of 0.2 (one-fifth) and are provided to help you estimate.

- (a) What are the sine and cosine of the angle θ pictured to the right? Give approximate answers to the nearest tenth.

$$\sin(\theta) = -.6 \quad \cos(\theta) = -.8$$

- (b) Sketch on the unit circle another angle φ , so that $\sin(\varphi) = \sin(\theta)$, but so that φ is not $\theta + 2\pi n$ for any integer n . What is $\cos(\varphi)$?

$$\cos \varphi = .8$$



2. Find all solutions to $\cos(2\pi(\theta - 1)) = \frac{\sqrt{3}}{2}$

The points on the unit circle with x-coordinate $\sqrt{3}/2$ are have corresponding angles $\pi/6, -\pi/6$

The solutions to the above equation are

$$2\pi(\theta - 1) = \pi/6 + 2\pi n \rightarrow \theta - 1 = 1/12 + n$$

$$2\pi(\theta - 1) = -\pi/6 + 2\pi n \rightarrow \theta - 1 = -1/12 + n$$

$$\boxed{\begin{aligned} \theta &= 13/12 + n \\ \theta &= 11/12 + n \end{aligned}}$$

for some integer n