

MATH 119: Quiz 4

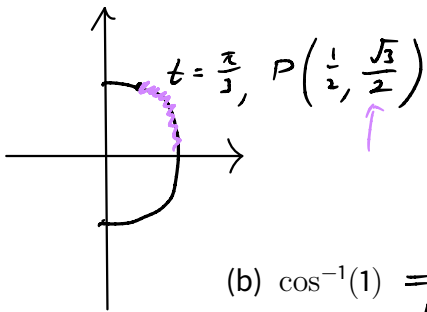
Name: Key

Directions:

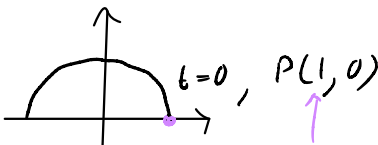
- * Show your thought process (commonly said as "show your work") when solving each problem for full credit.
- * If you do not know how to solve a problem, try your best and/or explain in English what you would do.
- * Good luck!

1. Find the following:

(a) $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right) = \boxed{\frac{\pi}{3}}$

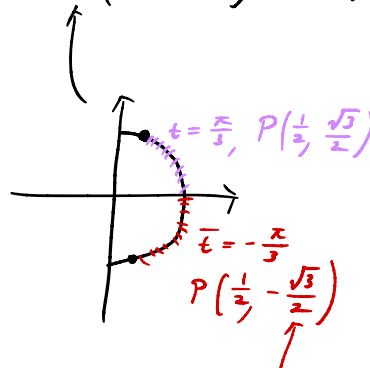
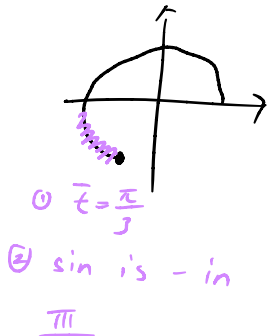


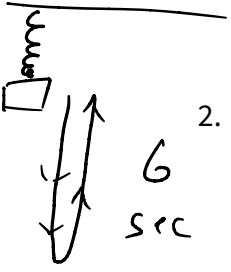
(b) $\cos^{-1}(1) = \boxed{0}$



(c) $\sin^{-1}\left(\sin\left(\frac{40\pi}{3}\right)\right) = \sin^{-1}\left(-\frac{\sqrt{3}}{2}\right) = \boxed{-\frac{\pi}{3}}$

$$\begin{aligned} \frac{40\pi}{3} &= \frac{39\pi}{3} + \frac{\pi}{3} \\ &= 13\pi + \frac{\pi}{3} \\ &= 12\pi + \pi + \frac{\pi}{3} \\ &= 6 \cdot (2\pi) + \pi + \frac{\pi}{3} \end{aligned}$$





2. A mass suspended from a spring is at rest. It is compressed upwards 2 centimeters and released at time $t = 0$. It returns to the compressed position after 6 seconds.

* Find an equation that describes its displacement.

$$y = a \cos \omega t$$

$$a = 2, \text{ period: } 6 = \frac{2\pi}{\omega} \rightarrow \omega = \frac{2\pi}{6} = \frac{\pi}{3}$$

$$y = 2 \cos\left(\frac{\pi}{3} x\right)$$

* Draw one period of its displacement over time.

