MATH 119: Quiz 3

Name: __key__

Directions: No technology, internet, or notes. Do everything by hand. If you have a question, ask me. Good luck!

1. Given $t = \frac{4\pi}{3}$, find

    (a) $\sin t$

    $E \approx \frac{\pi}{3}$

    1. $\widetilde{t} = \frac{\pi}{3}$, 2. $\sin$ – in III, $\sin \frac{4\pi}{3} = -\sin \frac{\pi}{3} = \boxed{-\frac{\sqrt{3}}{2}}$
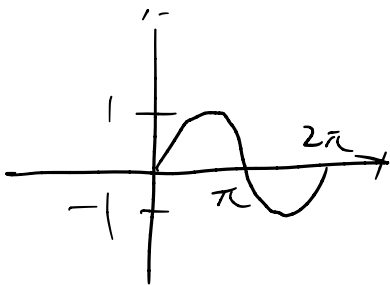
    (b) $\cos t$

    1. $\widetilde{t} = \frac{\pi}{3}$, 2. $\cos$ – in III, $\cos \frac{4\pi}{3} = -\cos \frac{\pi}{3} = \boxed{-\frac{1}{2}}$
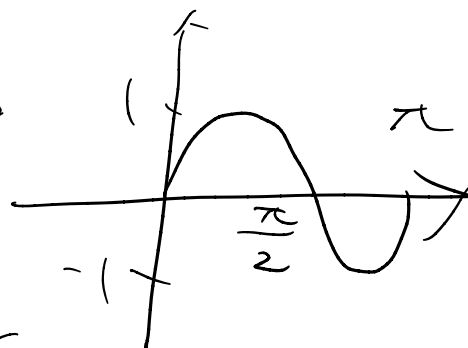
    (c) $\tan t$

    1. $\widetilde{t} = \frac{\pi}{3}$, $\tan + $ in III, $\tan\left(\frac{4\pi}{3}\right) = \tan \frac{\pi}{3} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \frac{\sqrt{3}}{2} \cdot \frac{2}{1} = \boxed{\sqrt{3}}$

2. Draw one period of $f(x) = \sin(2x+\pi)$. Be sure to include the x-intercepts and to show the amplitude clearly on the graph.
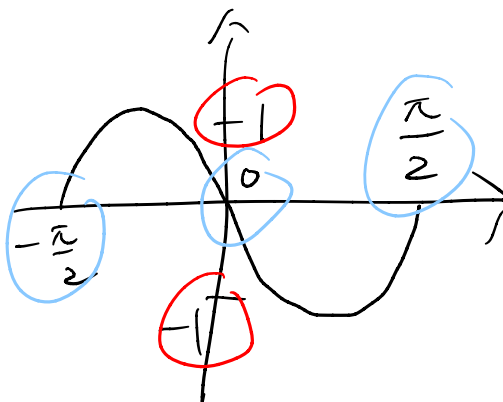
$\sin x$

$\sin (2x)$

$\sin\left(2\left(x + \frac{\pi}{2}\right)\right)$

3. Evaluate $\sin^{-1}\left(\sin\left(\frac{\pi}{4}\right)\right)$.

1. $\sin^{-1}\left(\sin\left(x\right)\right) = x$ on $x \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

So $\sin^{-1}\left(\sin\left(\frac{\pi}{4}\right)\right) = \frac{\pi}{4}$ since

$-\frac{\pi}{2} \leq \frac{\pi}{4} \leq \frac{\pi}{2}$

2. alternatively can also do this

$\sin^{-1}\left(\sin\left(\frac{\pi}{4}\right)\right) = \sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$

do this

In english, what value of $t \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

gives $\sin(t) = \frac{\sqrt{2}}{2}$?   ← positive only $\frac{\pi}{4}$

$= \left(\frac{\pi}{4}\right)$

for hw:

grade 15:

if sin t > 0   :

if cos t < 0   :

Circles overlap in quadrant II

So II

2 pts

8 pts for completion.