Int 3 Trig Practice Love WS Name:_____ Per _____ Group #____

1. Give the degree equivalent.

a) $\frac{5\pi}{3}\left(\frac{180}{\pi}\right)$ → 300°

b) $-\frac{5\pi}{6}\left(\frac{180}{\pi}\right)$ → $-5(30)$ → −150°

c) $\frac{7\pi}{4}\left(\frac{180}{\pi}\right)$ → $\frac{7(180)}{4}$ → 315°

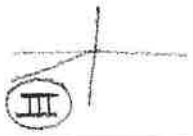
2. Give the radian equivalent

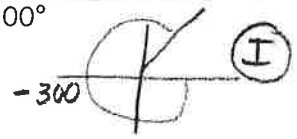
a) $135°\left(\frac{\pi}{180}\right)$ → $\frac{135\pi}{180}$ → $\frac{3\pi}{4}$

b) $-120°\left(\frac{\pi}{180}\right)$ → $-\frac{2\pi}{3}$

c) $330°\left(\frac{\pi}{180}\right)$ → $\frac{33\pi}{18}$

3. If each angle is in standard position, state what quadrant the terminal side is in

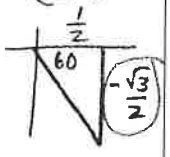
a) $\frac{12\pi}{11}$ $\frac{11\pi}{11}$  III

b) −300°  I

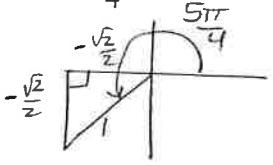
c) $\frac{19\pi}{2} - 4\left(\frac{4\pi}{2}\right) \rightarrow \frac{3\pi}{2}$ between 3rd & 4th  on −y AXIS

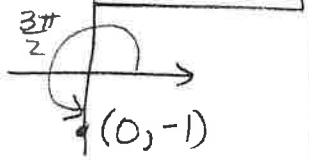
4. Find the exact value for the following. Draw a picture of the angle in the correct quadrant with the special Δ labeled.

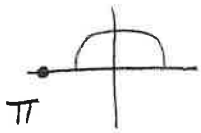
a) $\sin\frac{23\pi}{3} - 3\left(\frac{6\pi}{3}\right)$

$\sin\frac{5\pi}{3}$ 

$\sin\frac{5\pi}{3} = -\frac{\sqrt{3}}{2}$

b) $\cos\frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$ 

c) $\tan\frac{3\pi}{2} = \frac{-1}{0}$ undefined 

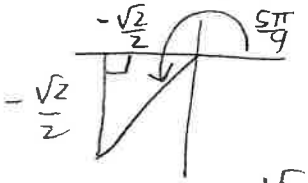
d) $\csc\pi$ 

$\sin\pi = \frac{0}{1}$

$\csc\pi = \frac{1}{0}$

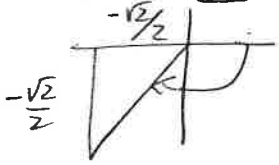
undefined

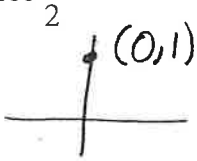
e) $\sec\left(-\frac{11\pi}{4}\right) + 2\left(\frac{8\pi}{4}\right)$

$\sec\left(\frac{5\pi}{4}\right)$ 

$\cos\frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$

$\sec\frac{5\pi}{4} = \frac{2\sqrt{2}}{-\sqrt{2}\sqrt{2}} \rightarrow -\sqrt{2}$

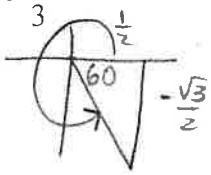
f) $\tan\left(-\frac{3\pi}{4}\right) = 1$ 

g) $\sec\frac{\pi}{2}$ 

$\cos\frac{\pi}{2} = 0$

$\sec\frac{\pi}{2} = \frac{1}{0}$

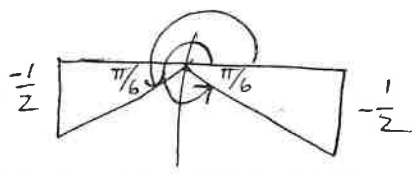
undefined

h) $\cot\frac{5\pi}{3}$ 

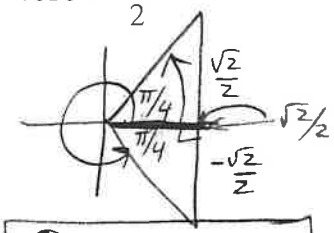
$\tan\theta = \frac{-\sqrt{3}}{1}$

$\cot\theta = \frac{1}{-\sqrt{3}}\frac{\sqrt{3}}{\sqrt{3}}$ → $-\frac{\sqrt{3}}{3}$

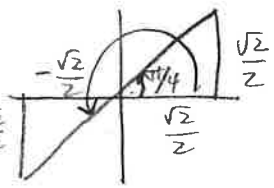
5. Without a calculator, solve for 2 values of θ in radians between $0 \le \theta < 2\pi$. Exact values.

a) $\sin\theta = -\frac{1}{2}$ 

$\theta = \frac{7\pi}{6}$ and $\frac{11\pi}{6}$

b) $\cos\theta = \frac{\sqrt{2}}{2}$ 

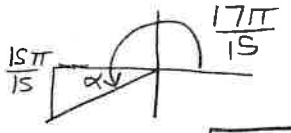
$\theta = \frac{\pi}{4}, \frac{7\pi}{4}$

c) $\tan\theta = 1$ 

$\theta = \frac{\pi}{4}, \frac{5\pi}{4}$

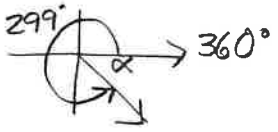
6. Find the reference angle

a) $\frac{17\pi}{15}$



$\frac{15\pi}{15}+\alpha=\frac{17\pi}{15} \rightarrow \boxed{\alpha=\frac{2\pi}{15}}$

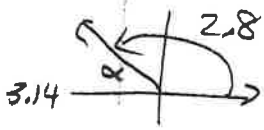
b) 299°



$299+\alpha=360 \rightarrow \boxed{\alpha=61°}$

c) 2.8

$2.8+\alpha=3.14$ $\boxed{\alpha=0.34}$



$3.14 - 2.80 = .34$

7. State the amplitude, period, phase shift and vertical shift for the following. DON'T GRAPH

a. $y=4\sin\left(2x-\frac{\pi}{4}\right)+5$

$y=4\sin 2\left(x-\frac{\pi}{8}\right)+5$

Amp: 4 Phase Shift: $\frac{\pi}{8}$

Period: π Vertical shift: 5

b. $5-\frac{2}{3}y=\cos\left(2x-\frac{\pi}{6}\right)$

$-\frac{3}{2}\left(-\frac{2}{3}y=\cos 2\left(x-\frac{\pi}{12}\right)-5\right)$

$y=-\frac{3}{2}\cos 2\left(x-\frac{\pi}{12}\right)+\frac{15}{2}$

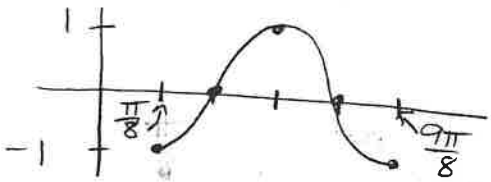
Amp: $\frac{3}{2}$ Phase Shift: $\frac{\pi}{12}$

Period: π Vertical shift: $\frac{15}{2}$ or 7.5

8. Sketch. Label Axes.

a. $y=-\cos\left(2x-\frac{\pi}{4}\right)$

$y=-\cos 2\left(x-\frac{\pi}{8}\right)$



Start $2x-\frac{\pi}{4}=0 \rightarrow 2x=\frac{\pi}{4}$

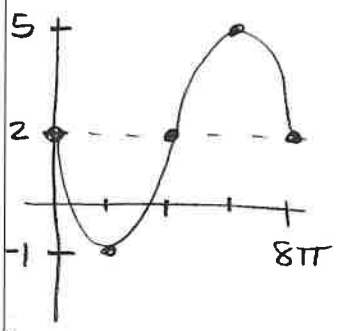
$\Rightarrow \boxed{x=\frac{\pi}{8}}$

End $2x-\frac{\pi}{4}=2\pi$

$8x-\pi=8\pi$

$8x=9\pi$ $\boxed{x=\frac{9\pi}{8}}$

b. $y=-3\sin\left(\frac{x}{4}\right)+2$

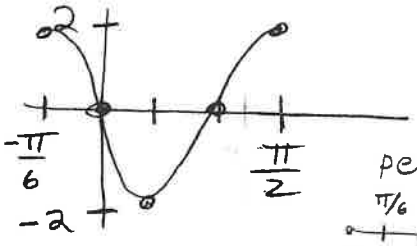


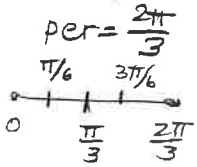
$per=\frac{2\pi}{1/4}$

$\rightarrow 2\pi \cdot 4 \rightarrow \boxed{8\pi}$

c. $y=2\cos(3x+\frac{\pi}{2})$

$y=2\cos 3\left(x+\frac{\pi}{6}\right)$





Start

$3x+\frac{\pi}{2}=0$

$3x=-\frac{\pi}{2}$

$\boxed{x=-\frac{\pi}{6}}$

End

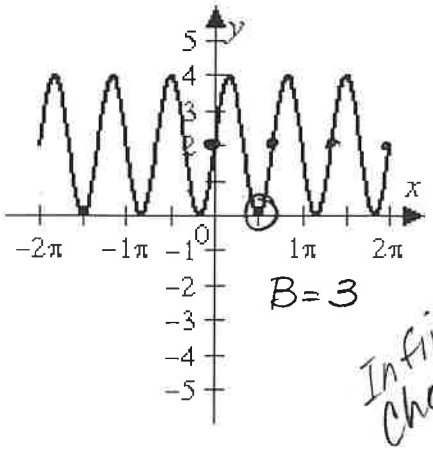
$3x+\frac{\pi}{2}=2\pi$

$6x+\pi=4\pi$

$6x=3\pi$

$x=\frac{3\pi}{6} \rightarrow \frac{\pi}{2}$

9. Write two equations for the graph.



B = 3

Infinite Choices

Sine:

$y=2\sin 3x+2$

Cosine:

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

$y=2\cos 3\left(x-\frac{\pi}{6}\right)+2$

$y=-2\cos 3\left(x+\frac{\pi}{6}\right)+2$