

SCORE: ____ / 30 POINTS

NO CALCULATORS ALLOWED

YOU MUST SHOW PROPER WORK TO RECEIVE FULL CREDIT

Graph one period of the function $y = -2 - \csc \frac{\pi}{6} x$.

SCORE: ____ / 10 POINTS

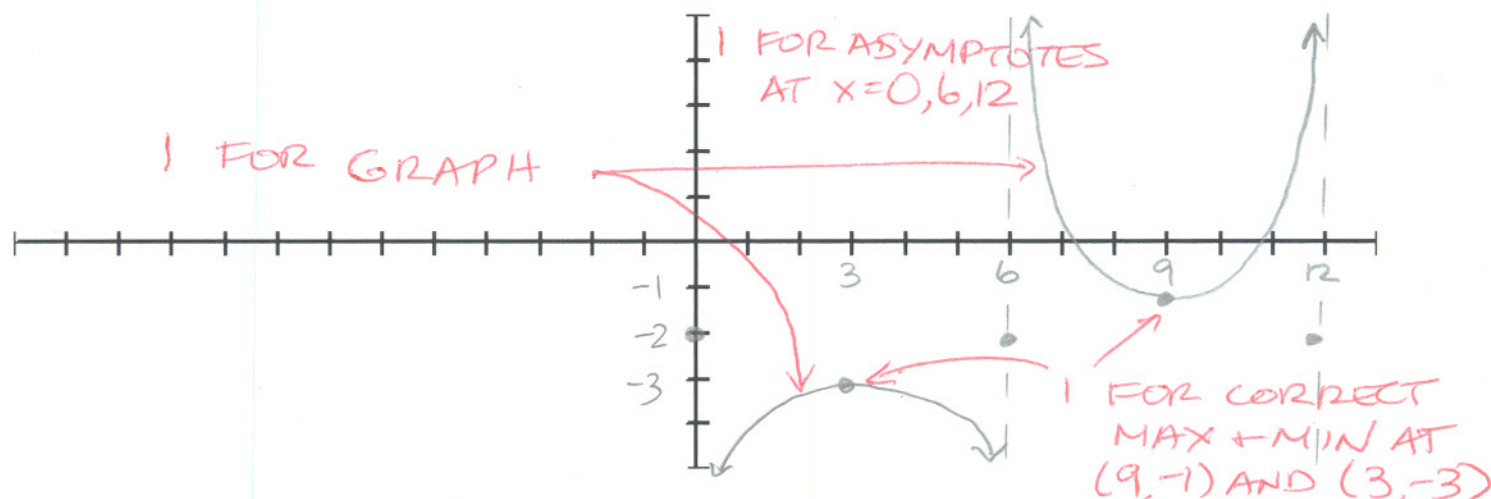
Label the 5 important x -coordinates and 3 important y -coordinates on your graph as shown in class.

Draw your graph on the axes included below.

$y = -2 - \sin \frac{\pi}{6} x$
 AMPLITUDE = $|-1| = 1$
 PERIOD = $\frac{2\pi}{\frac{\pi}{6}} = 12$ ($\frac{1}{4}$ PERIOD = 3)
 MIDLINE $y = -2$ $\rightarrow$ MAX $y = -2 + 1 = -1$
 MIN $y = -2 - 1 = -3$
 PHASE SHIFT $\frac{\pi}{6} x = 0 \rightarrow x = 0$
 ORIENTATION $\curvearrowright$

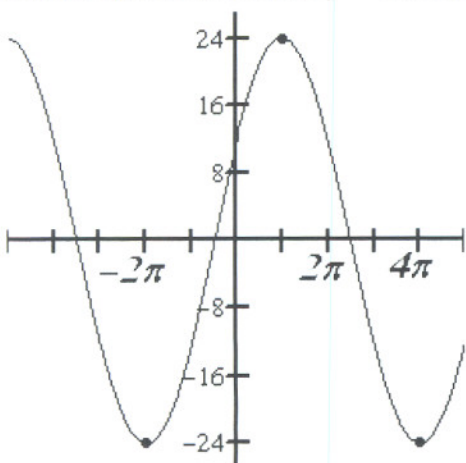
IMPORTANT POINTS

$x = 0$	$\frac{1}{2}$
$x = 0 + 3 = 3$	$\frac{1}{2}$
$x = 3 + 3 = 6$	$\frac{1}{2}$
$x = 6 + 3 = 9$	$\frac{1}{2}$
$x = 9 + 3 = 12$	$\frac{1}{2}$



Find an equation of the form $y = A \cos(Bx + C)$ for the graph shown below.

SCORE: ____ / 4 POINTS



SOLUTION 1:
 $y = -24 \cos(\frac{1}{3}x + \frac{2\pi}{3})$
 PHASE SHIFT $x = -2\pi$
 AMPLITUDE = 24
 PERIOD = $4\pi - (-2\pi) = 6\pi$
 $\frac{2\pi}{B} = 6\pi \rightarrow B = \frac{1}{3}$
 $-2\pi = -\frac{C}{B} = -\frac{C}{\frac{1}{3}} \rightarrow C = \frac{2\pi}{3}$
 ORIENTATION $\curvearrowright$
 $A = -24$

SOLUTION 2:
 $y = 24 \cos(\frac{1}{3}x - \frac{\pi}{3})$
 PHASE SHIFT $x = \pi$
 AMPLITUDE = 24
 PERIOD = 6π
 $\frac{2\pi}{B} = 6\pi \rightarrow B = \frac{1}{3}$
 $\pi = -\frac{C}{B} = -\frac{C}{\frac{1}{3}} \rightarrow C = -\frac{\pi}{3}$
 ORIENTATION $\curvearrowleft$
 $A = 24$

Fill in the blanks.

SCORE: ___ / 4 POINTS

- [a] The equations of the asymptotes of $y = \tan x$ are $x = \frac{\pi}{2} + n\pi$, n IS ANY INTEGER $\frac{1}{2}$
- [b] The period of $y = \tan x$ is π $\frac{1}{2}$
- [c] The equations of the asymptotes of $y = \csc x$ are $x = n\pi$, n IS ANY INTEGER $\frac{1}{2}$
- [d] The period of $y = \csc x$ is 2π $\frac{1}{2}$

Graph one period of the function $y = 2 \cos\left(\frac{x}{4} + \frac{7\pi}{8}\right) - 3$ using the procedure shown in class.

SCORE: ___ / 12 POINTS

Find all the relevant information (including labeling the 5 important x -coordinates and 3 important y -coordinates) as shown in class.

Draw your graph on the axes included below.

AMPLITUDE = $|2| = 2$ $\frac{1}{2}$

PERIOD = $\frac{2\pi}{\frac{1}{4}} = 8\pi$ $\frac{1}{2}$ ($\frac{1}{4}$ PERIOD = 2π)

MIDLINE $y = -3$ $\frac{1}{2}$
 MAX $y = -3 + 2 = -1$ $\frac{1}{2}$
 MIN $y = -3 - 2 = -5$ $\frac{1}{2}$

PHASE SHIFT $\frac{x}{4} + \frac{7\pi}{8} = 0 \rightarrow x = -\frac{7\pi}{2}$ $\frac{1}{2}$

OR $x = -\frac{7\pi}{8} \cdot \frac{4}{1}$

IMPORTANT POINTS $x = -\frac{7\pi}{2}$

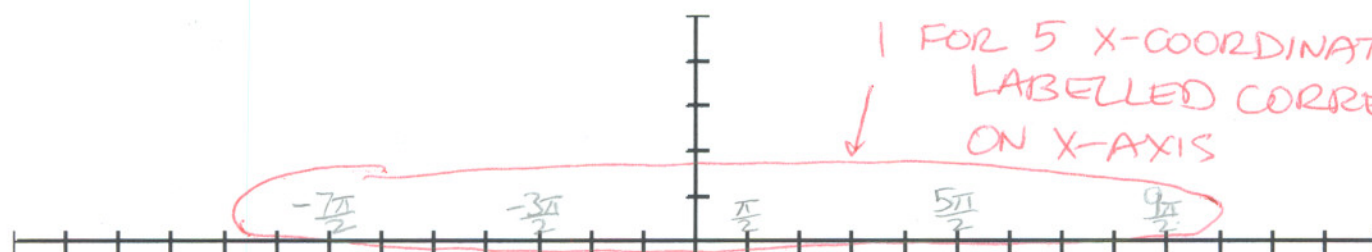
$x = -\frac{7\pi}{2} + 2\pi = -\frac{3\pi}{2}$ $\frac{1}{2}$

$x = -\frac{3\pi}{2} + 2\pi = \frac{\pi}{2}$ $\frac{1}{2}$

$x = \frac{\pi}{2} + 2\pi = \frac{5\pi}{2}$ $\frac{1}{2}$

$x = \frac{5\pi}{2} + 2\pi = \frac{9\pi}{2}$ $\frac{1}{2}$

ORIENTATION 



1 FOR 5 X-COORDINATES LABELLED CORRECTLY ON X-AXIS

1 FOR GRAPH CONNECTING 5 DOTS CORRECTLY

1 FOR 3 Y-COORDINATES LABELLED CORRECTLY ON Y-AXIS

1 FOR 5 DOTS AT CORRECT POSITIONS