

SCORE: ___ / 30 POINTS

NO CALCULATORS ALLOWED**YOU MUST SHOW PROPER WORK TO RECEIVE FULL CREDIT**Graph one period of the function $y = 2 - \csc \frac{\pi}{4} x$.

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.

$$y = 2 - \sin \frac{\pi}{4} x$$

AMPLITUDE = $|-1| = 1$

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

MIDLINE $y = 2$
MAX $y = 2 + 1 = 3$
MIN $y = 2 - 1 = 1$

PHASE SHIFT $\frac{\pi}{4} x = 0 \rightarrow x = 0$

ORIENTATION

IMPORTANT POINTS

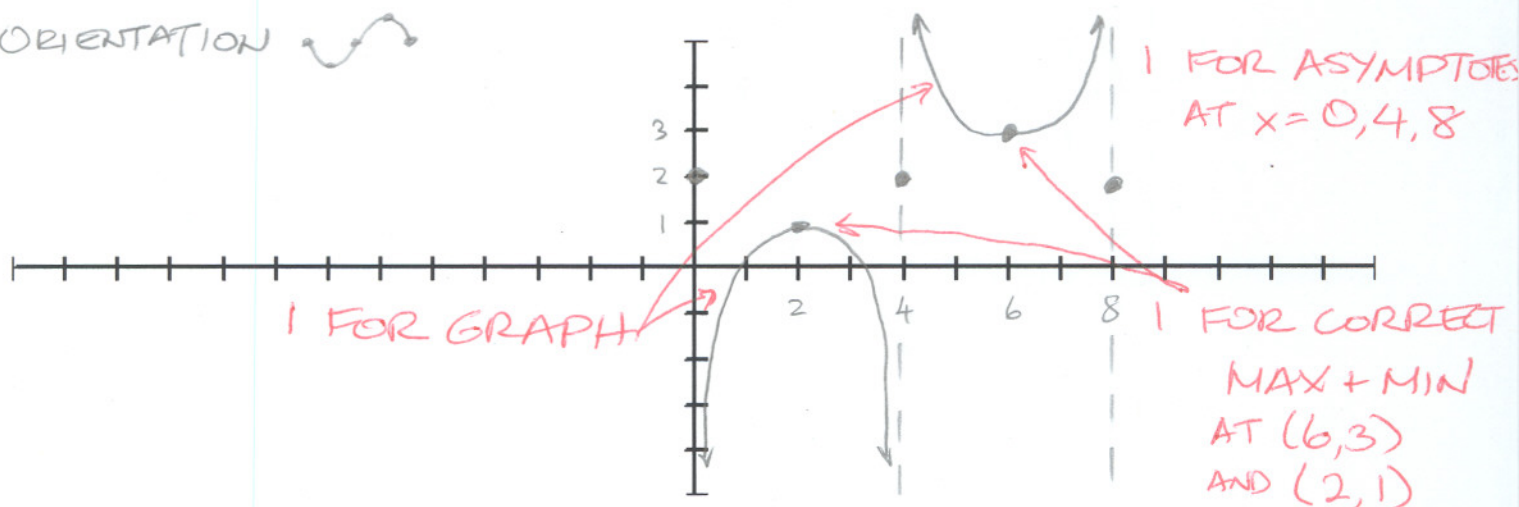
$x = 0$

$x = 0 + 2 = 2$

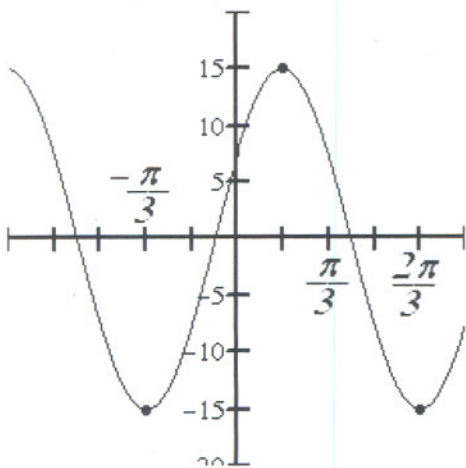
$x = 2 + 2 = 4$

$x = 4 + 2 = 6$

$x = 6 + 2 = 8$

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

SCORE: ___ / 4 POINTS



SOLUTION 1:
 $y = 15 \cos(2x + \frac{2\pi}{3})$
PHASE SHIFT $x = -\frac{\pi}{3}$

AMPLITUDE = 15

PERIOD = $\frac{2\pi}{3} - (-\frac{\pi}{3}) = \pi$

$\frac{2\pi}{B} = \pi \rightarrow B = 2$

$-\frac{\pi}{3} = -\frac{C}{B} = -\frac{C}{2} \rightarrow C = \frac{2\pi}{3}$

ORIENTATION
 $A = -15$

SOLUTION 2:
 $y = 15 \cos(2x - \frac{\pi}{3})$
PHASE SHIFT $x = \frac{\pi}{6}$

AMPLITUDE = 15

PERIOD = π

$\frac{2\pi}{B} = \pi \rightarrow B = 2$

$\frac{\pi}{6} = -\frac{C}{B} = -\frac{C}{2} \rightarrow C = -\frac{\pi}{3}$

ORIENTATION
 $A = 15$

Fill in the blanks.

SCORE: ___ / 4 POINTS

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

Graph one period of the function $y = 3\cos\left(\frac{x}{4} + \frac{5\pi}{8}\right) - 1$ 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 = $|3| = 3$

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

MIDLINE $y = -1$ $\begin{cases} \text{MAX } y = -1 + 3 = 2 \\ \text{MIN } y = -1 - 3 = -4 \end{cases}$

PHASE SHIFT $\frac{x}{4} + \frac{5\pi}{8} = 0 \rightarrow x = -\frac{5\pi}{2}$

OR $x = -\frac{5\pi}{8} - \frac{\pi}{4}$

IMPORTANT POINTS

$x = -\frac{5\pi}{2}$

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

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

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

$x = \frac{7\pi}{2} + 2\pi = \frac{11\pi}{2}$

ORIENTATION

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

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

1 FOR GRAPH CONNECTING 5 POINTS CORRECTLY

1 FOR 5 DOTS AT CORRECT POSITIONS

