

# Math 130 - Quiz 3

September 23, 2020

Name key

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. You must work individually on this quiz. This quiz is due September 28.

1. (4 points) On the attached graph paper, graph two full periods and state the amplitude, period, and midline. Also state the maximum and minimum  $y$ -values and their corresponding  $x$ -values on one period.

$$y = 2 \sin\left(\frac{1}{2}x\right)$$

SEE ATTACHED SHEET.

2. (4 points) On the attached graph paper, graph two full periods and state the amplitude, period, and midline. Also state the maximum and minimum  $y$ -values and their corresponding  $x$ -values on one period.

$$y = -\cos\left(x + \frac{\pi}{3}\right) + 1$$

SEE ATTACHED SHEET.

3. (2 points) Determine the locations of all asymptotes of the graph of  $y = 2 \tan(4x - 32)$ .

$$4x - 32 = \frac{\pi}{2} \Rightarrow 4x = \frac{\pi}{2} + 32$$

$$x = \frac{\pi}{8} + 8$$

$$4x - 32 = -\frac{\pi}{2} \Rightarrow 4x = -\frac{\pi}{2} + 32$$

$$x = -\frac{\pi}{8} + 8$$

THESE ARE TWO CONSECUTIVE ASYMPTOTES.

IN GENERAL, ASYMPTOTES SATISFY

$$4x - 32 = \frac{k\pi}{2} \text{ OR}$$

$$x = \frac{k\pi}{8} + 8 \text{ WHERE } k \text{ IS POS/NEG ODD.}$$

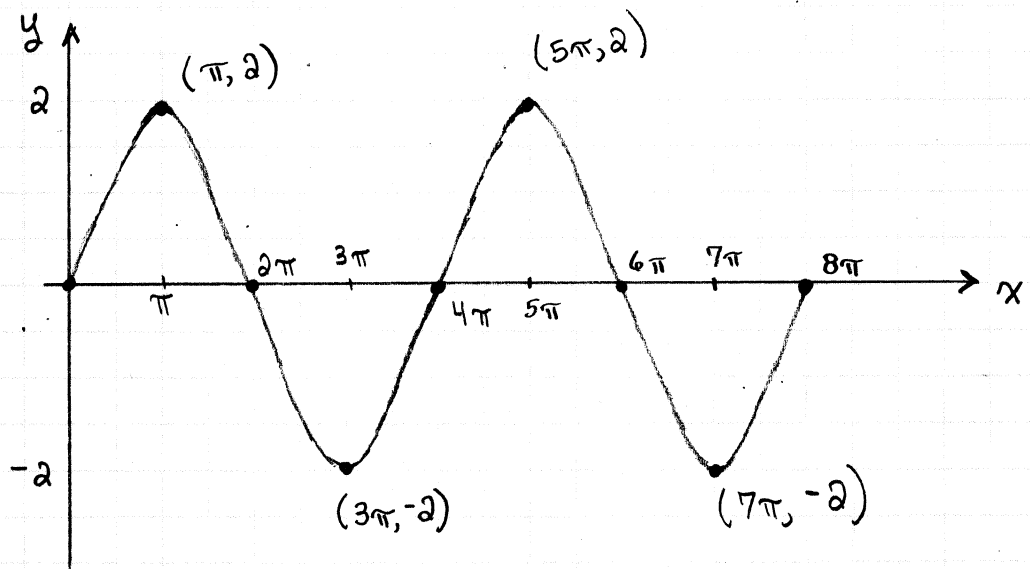
#1

$$y = 2 \sin\left(\frac{1}{2}x\right)$$

$$\text{Amplitude} = 2$$

$$\text{Period} = \frac{2\pi}{\frac{1}{2}} = 4\pi$$

$$\text{Midline: } y = 0$$



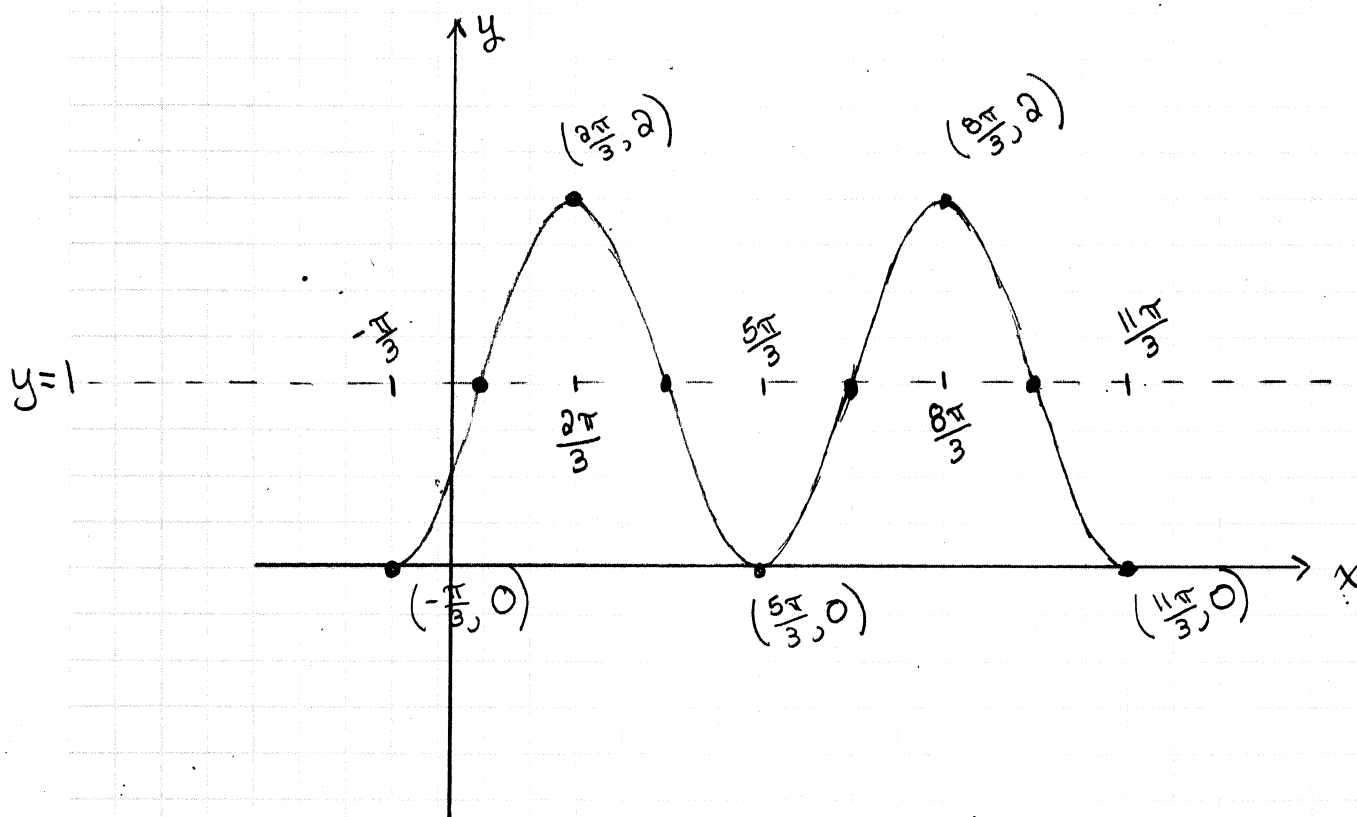
#2  $y = -\cos\left(x + \frac{\pi}{3}\right) + 1$

(NOTICE THAT THE BASIC GRAPH IS THAT OF  $y = -\cos x$  --- AN UPSIDE DOWN COSINE.)

AMPLITUDE = 1

PERIOD =  $2\pi$

MIDLINE:  $y = 1$



When  $x = 0$ ,

$$y = -\cos\left(\frac{\pi}{3}\right) + 1$$

$= \frac{1}{2}$  SO THE  $y$ -AXIS IS ABOUT THERE