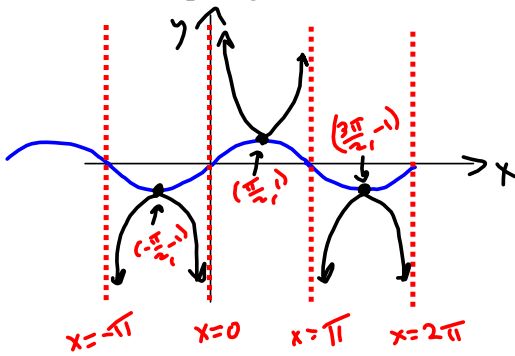
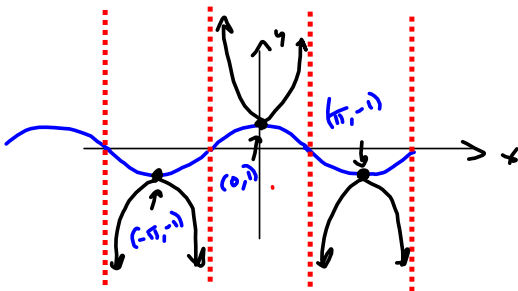


Graphing Stuff and "build-a-cosine" stuff.



Graph of $\csc(x) = \frac{1}{\sin(x)}$

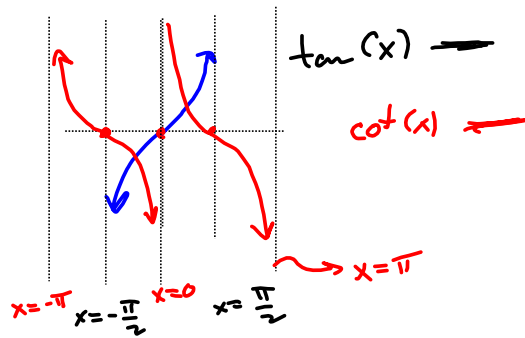
$\sin(x)$



Graph of $\sec(x) = \frac{1}{\cos(x)}$

$\cos(x)$

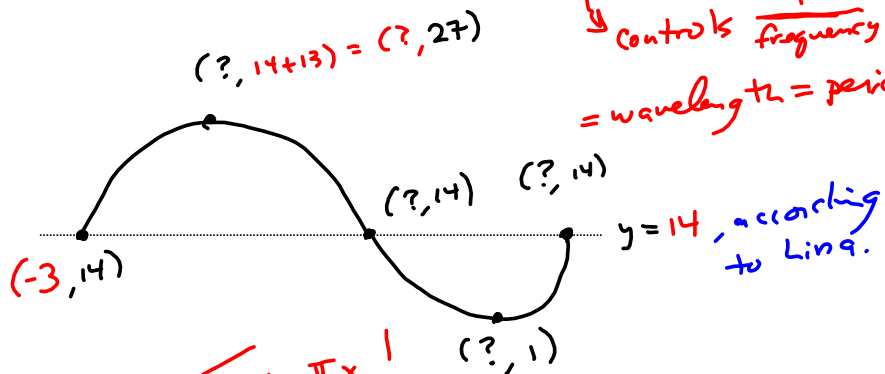
$$\cot(x) = \frac{1}{\tan(x)}$$



Graph $13 \sin\left(\frac{\pi}{4}x + \frac{3\pi}{4}\right) + 14$

$13 \sin\left(\frac{\pi}{4}(x+3)\right) + 14$
 Amp = 13
 start $\textcircled{1} x = -3$
 $y = 14$ midline

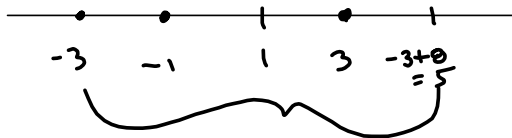
controls frequency
 = wavelength = period

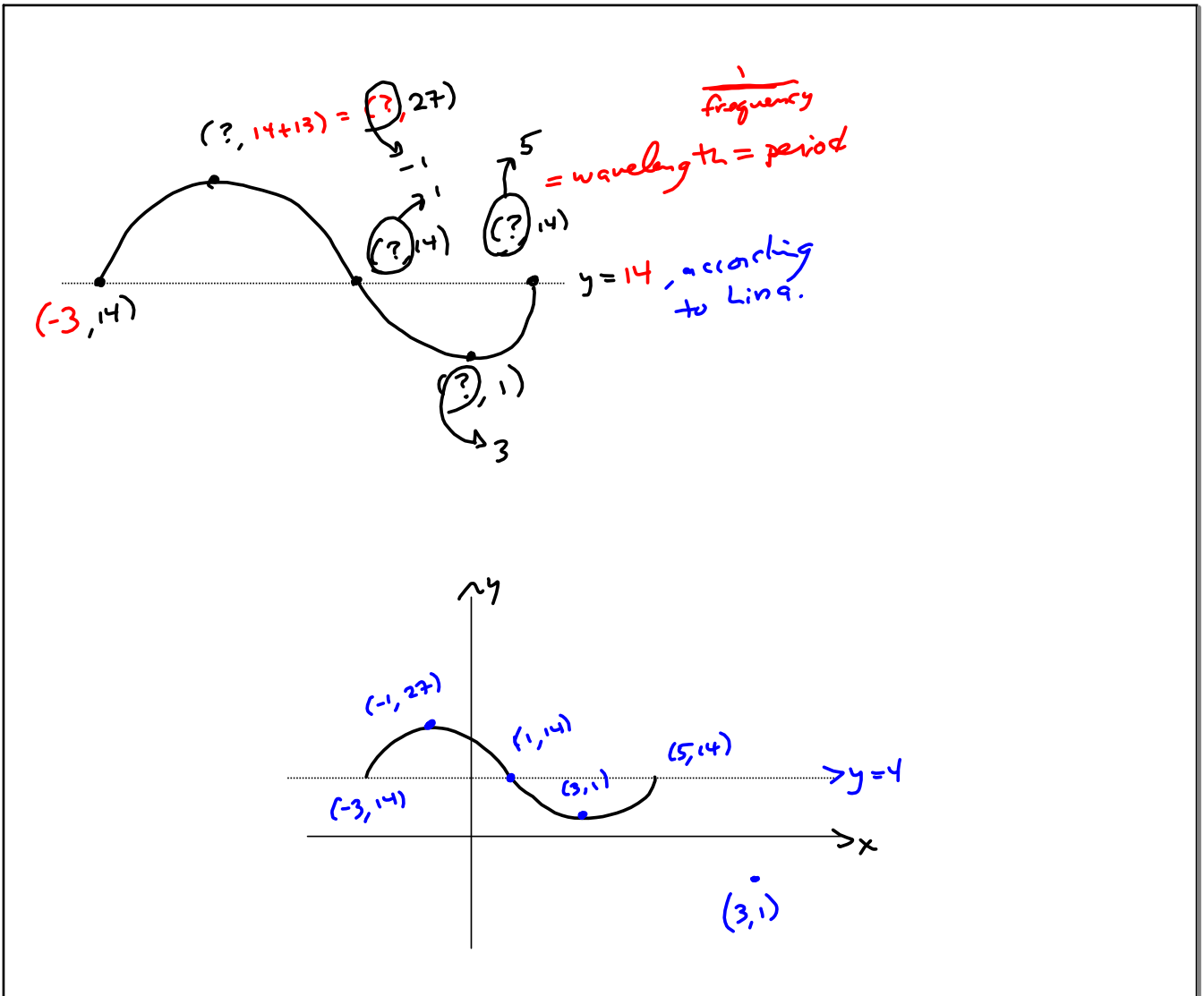


~~$\frac{6\pi}{6}x = 2\pi \Rightarrow x = \frac{2\pi}{\frac{\pi}{6}} = (2\pi)\left(\frac{6}{\pi}\right) = \frac{6}{2} = 3 \Rightarrow 12$~~
 No, $\frac{\pi}{4}x$!

$\frac{\pi}{4}x = 2\pi \Rightarrow x = (2\pi)\left(\frac{4}{\pi}\right) = 8 = T$

$\frac{-3+5}{2} = \frac{2}{2} = 1$





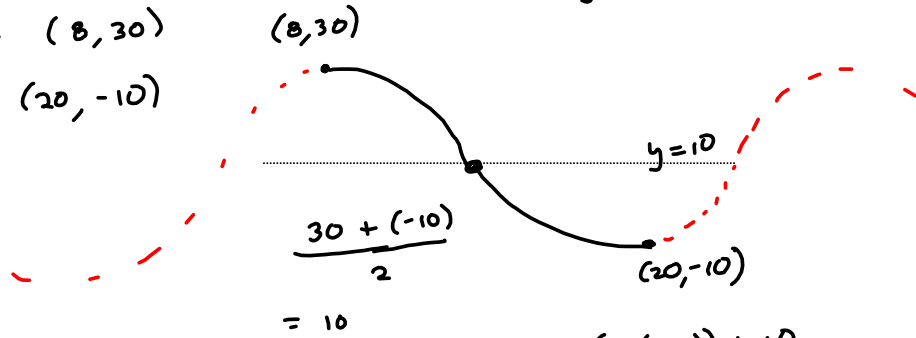
High tide is 30 feet at 8 am. Low tide is -10 feet at 8 pm. Build a cosine function describing the tides, as a function of the hour of the day (military version)

Let x = time in hours after midnight.

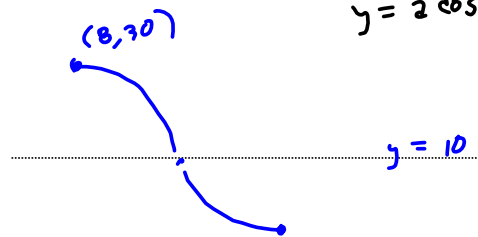
HIGH: (8, 30)

LOW: (20, -10)

$$y = 2 \cos(b(x-c)) + d$$



$$y = 2 \cos(b(x-c)) + 10$$



$$30 - 10 = 20 = a$$

Book Says

$$\frac{\text{HIGH} - \text{LOW}}{2} = \frac{30 - (-10)}{2} = \frac{40}{2} = 20 = \text{Amplitude}$$

$$y = \frac{\text{MIDLINE}}{\text{HIGH} + \text{LOW}} \cdot 2$$

$$y = 20 \cos(b(x-c)) + 10$$

HIGH @ $x = 8 = \text{START}$

$$y = 20 \cos(b(x-8)) + 10$$

We know $T = 24$ hrs

$$bx = 2\pi \text{ when } x = 24$$

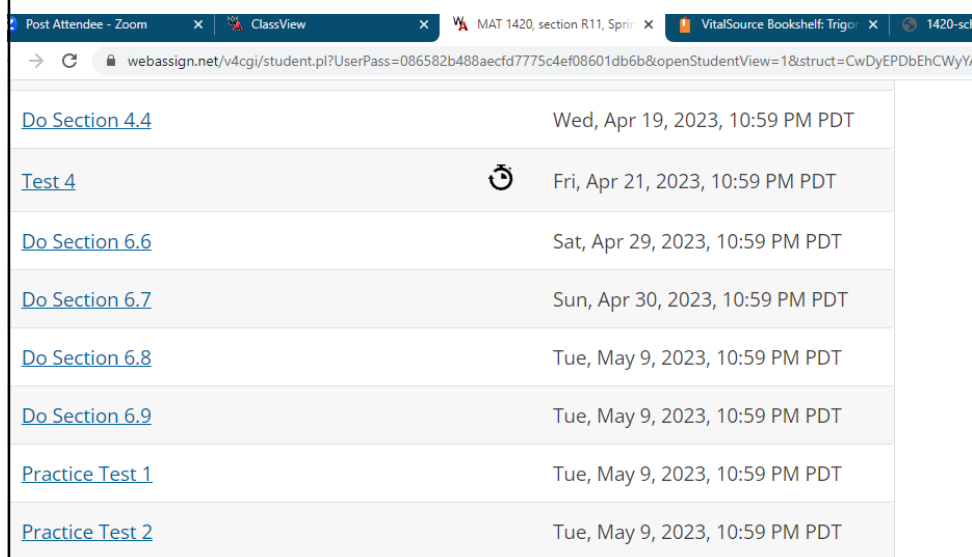
$$24b = 2\pi$$


$$b = \frac{2\pi}{24} = \frac{\pi}{12}$$

$$b = \frac{2\pi}{1}$$

$$y = 20 \cos\left(\frac{\pi}{12}(x-8)\right) + 10$$

Try to find Practice Test 1. It's there. You really want to take a crack at that before taking Test 1, proper.



Do Section 4.4		Wed, Apr 19, 2023, 10:59 PM PDT
Test 4		Fri, Apr 21, 2023, 10:59 PM PDT
Do Section 6.6		Sat, Apr 29, 2023, 10:59 PM PDT
Do Section 6.7		Sun, Apr 30, 2023, 10:59 PM PDT
Do Section 6.8		Tue, May 9, 2023, 10:59 PM PDT
Do Section 6.9		Tue, May 9, 2023, 10:59 PM PDT
Practice Test 1		Tue, May 9, 2023, 10:59 PM PDT
Practice Test 2		Tue, May 9, 2023, 10:59 PM PDT

the Practice Tests all live below the last homework section on the WebAssign.

14. [-/1 Points]

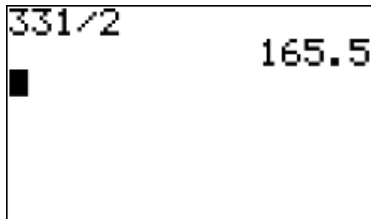
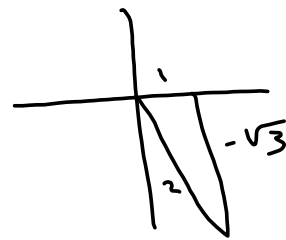
DETAILS

LARTRIG10 1.2.036.

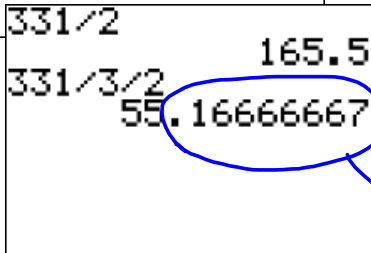
Evaluate the trigonometric function using its period as an aid.

$$\sin\left(-\frac{7\pi}{3}\right) = \sin\left(-\frac{7\pi}{3} + 2\pi\right) = \sin\left(\frac{-7\pi + 6\pi}{3}\right)$$

$$\sin\left(\frac{331\pi}{3}\right) = \sin\left(\frac{\pi}{3}\right) = \sin\left(-\frac{\pi}{3}\right) = -\frac{\sqrt{3}}{2}$$



$$\frac{331\pi}{3} \div 2\pi$$



→ 55 "2π's" + .166 2π's

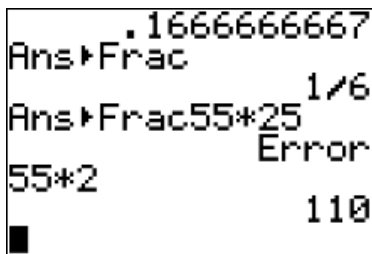
$$\left(\frac{1}{6}\right)(2\pi) = \frac{\pi}{3}$$

$$\frac{331\pi}{3}$$

Convert .16666 to fraction:

$$\begin{aligned} 10x &= 1.6666\dots \\ x &= .1666\dots \\ \hline 9x &= 1.5000\dots \end{aligned}$$

$$x = \frac{1.5}{9} = \frac{3}{18} = \frac{1}{6} \rightarrow \frac{1}{6} \cdot 2\pi = \frac{\pi}{3}$$



$$\underline{55 \times 2\pi} = 110\pi$$

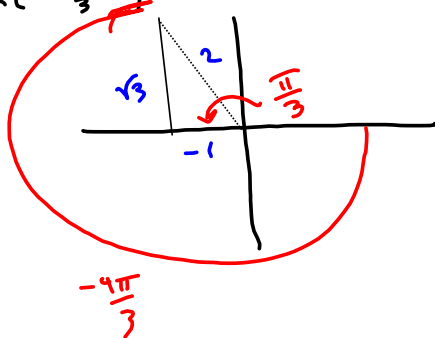
$$\frac{331\pi}{3} - 110\pi = \frac{331\pi}{3} - \frac{330\pi}{3}$$

$$\begin{aligned} \sin\left(-\frac{10\pi}{3}\right) &= \sin\left(-3\pi - \frac{\pi}{3}\right) \\ &= \sin\left(-2\pi - \pi - \frac{\pi}{3}\right) \\ &= \sin\left(-2\pi - \frac{4\pi}{3}\right) \quad \left(-\frac{1}{2}, \right. \end{aligned}$$

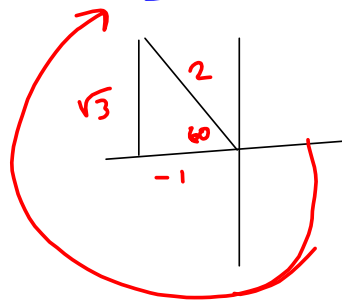
$$= \frac{\pi}{3}$$

LEARN THE
5 TRIANGLES

$$= \sin\left(-\frac{4\pi}{3}\right)$$



$$\begin{aligned} \left(-\frac{4\pi}{3}\right)\left(\frac{180^\circ}{\pi}\right) &= (-4)(60^\circ) \\ &= -240^\circ \end{aligned}$$



For these, you "mod out by 2π ."

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$$7 \bmod 3 = 1$$

$$\frac{7}{3} = 2 \text{ (1)}$$

$$\frac{331\pi}{3} \bmod 2\pi$$

$$\frac{\frac{331\pi}{3}}{2\pi} = \frac{331}{6} = \text{THE \# of } 2\pi\text{'s}$$

$$\begin{array}{r} 55 \text{ r } 1 \\ 6 \overline{) 331} \\ \underline{300} \\ 31 \\ \underline{30} \\ 1 \end{array}$$

$$55 \text{ revs} + \frac{1}{6} \text{ Rev}$$

So $\sin(\text{---})$

$$= \sin\left(\frac{1}{6} \text{ REV}\right)$$

$$= \sin\left(\frac{1}{6}(2\pi)\right) = \sin\left(\frac{\pi}{3}\right)$$

Write much. Think little.

Train your HAND to do math.

Take the practice test.

Work exercises without a net.

Come back a few days later, and do it again.