

Determine the amplitude, period, phase shift and vertical shift for each function. Make sure to label all significant coordinates and asymptotes.

$$y = 3 \sin x$$

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$$y = \sin 2\pi x + 3$$

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

Determine the amplitude, period, phase shift and vertical shift for each function. Make sure to label all significant coordinates and asymptotes.

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

Determine the amplitude, period, phase shift and vertical shift for each function.  
Make sure to label all significant coordinates and asymptotes.

$$y = \sec 2(x + \pi) + 2$$

Determine the amplitude, period, phase shift and vertical shift for each function. Make sure to label all significant coordinates and asymptotes.

$$y = 2 \csc \left( x + \frac{\pi}{4} \right)$$

Determine the amplitude, period, phase shift and vertical shift for each function. Make sure to label all significant coordinates and asymptotes. Then graph 2 periods of the function.

$$y = 2 \tan \frac{\pi}{2} (x + 1) - 1$$

Determine the amplitude, period, phase shift and vertical shift for each function. Make sure to label all significant coordinates and asymptotes. Then graph 2 periods of the function.

$$y = \cot 3\left(x - \frac{\pi}{3}\right)$$



Write the equation of the sine function give the following information.

Amplitude = 4, Period =  $3\pi$

On a particular day, the depth of water in feet at the entrance to a harbor is modeled by the function  $d(t) = 8 + 4 \sin 0.5t$ , where  $t$  is hours after 6 A.M.

a. What are the minimum and maximum depths on this day? What times do they happen?

Maximum Depth \_\_\_\_\_

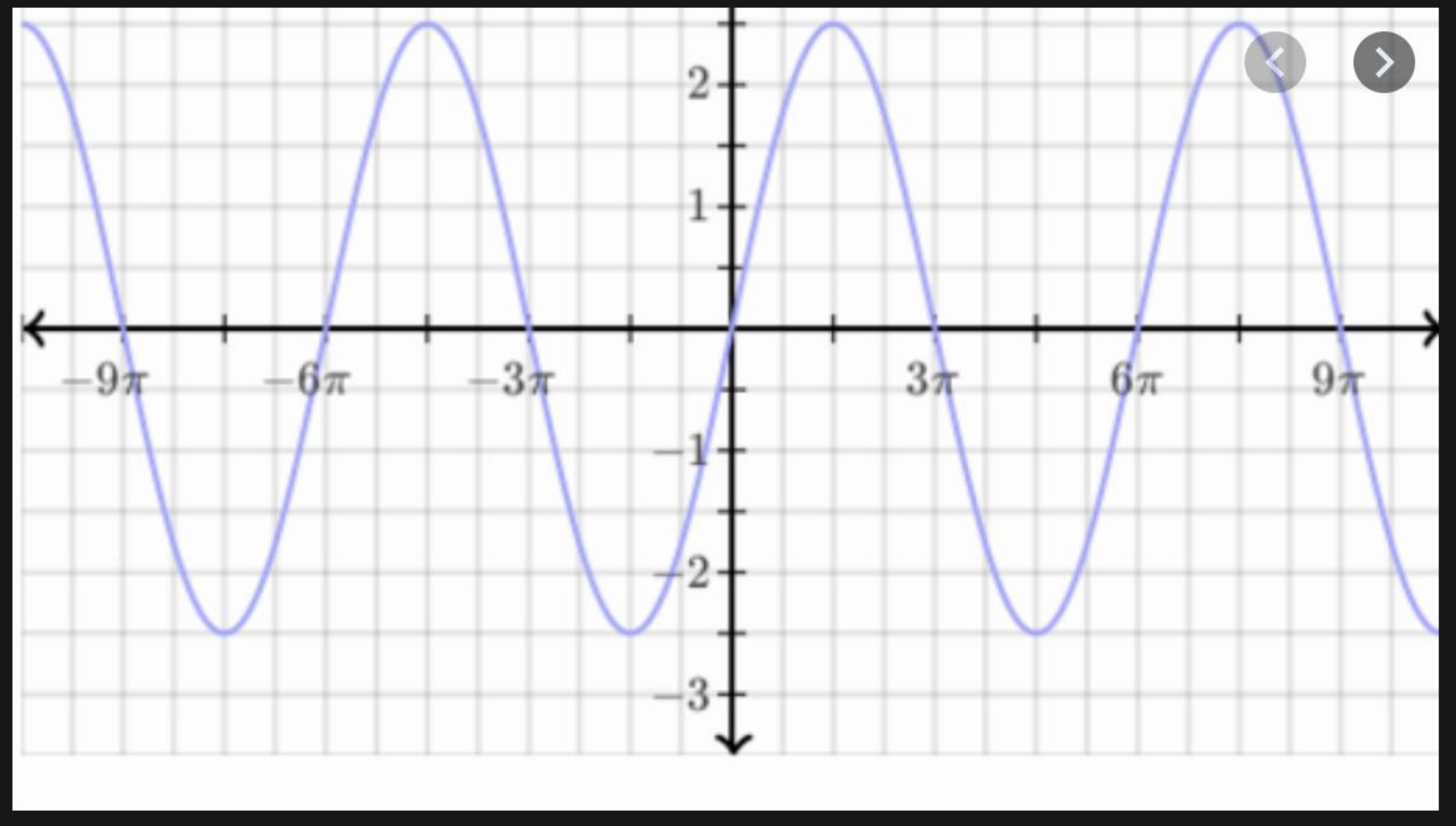
Time it occurs \_\_\_\_\_

Minimum Depth \_\_\_\_\_

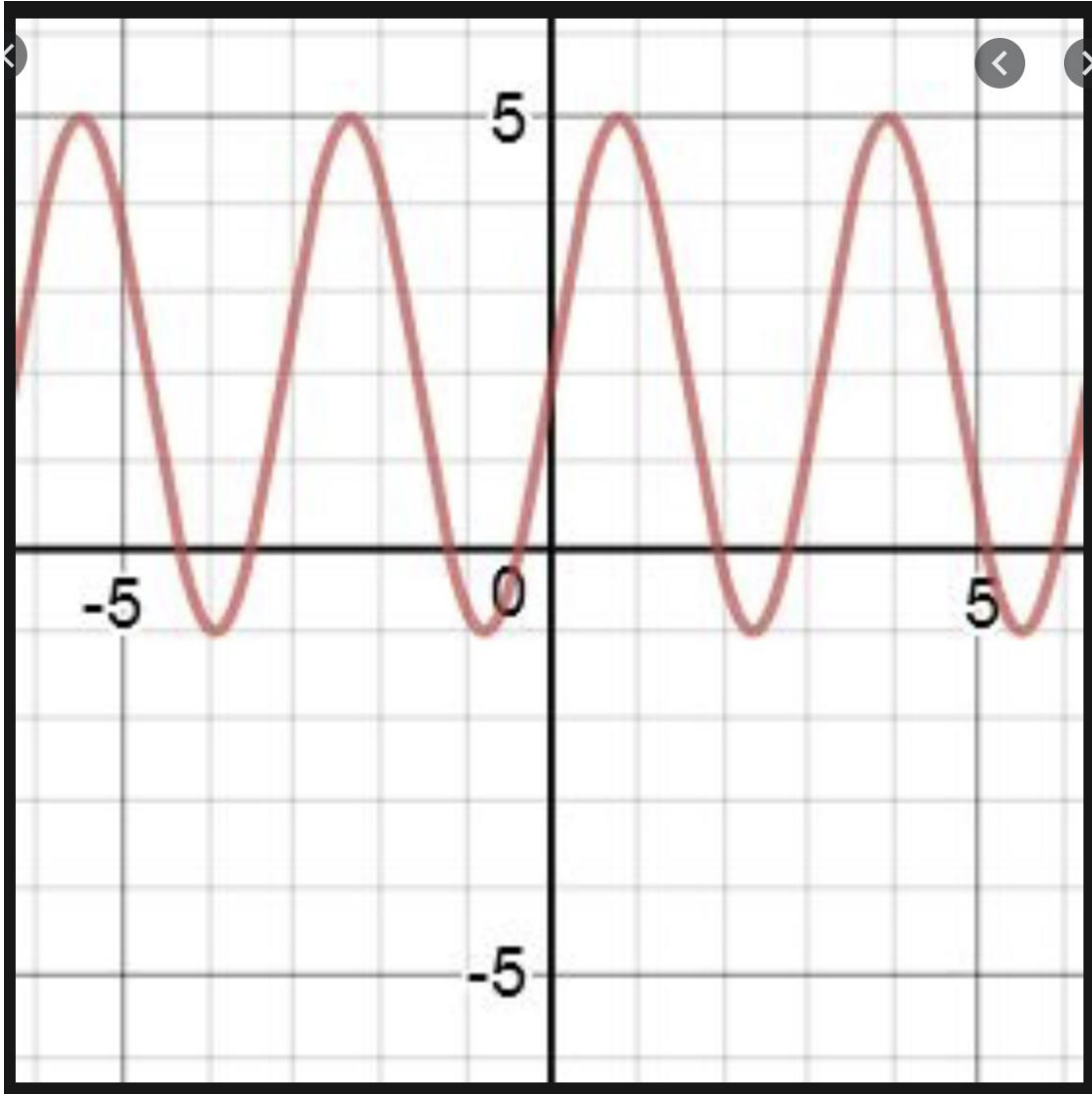
Time it occurs \_\_\_\_\_

b. Edgar has a boat that needs at least 6 feet of water. During what times after 6 A.M. and before 7 P.M. will the water at the entrance to the harbor be less than 6 feet deep? Write and solve an equation to help you answer the question.

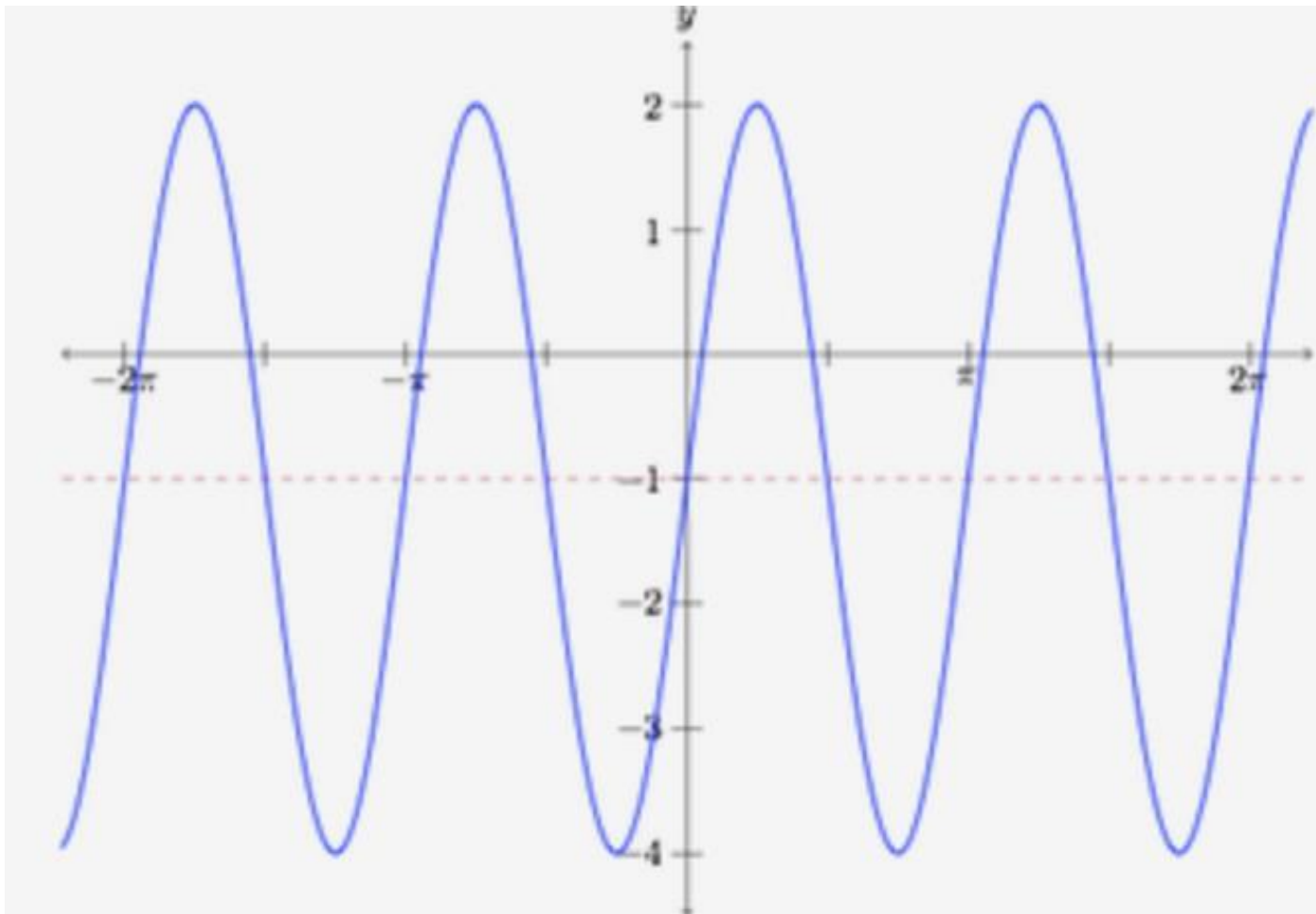
Write 2 equations of the graph below. One equation for sine and the other for cosine.



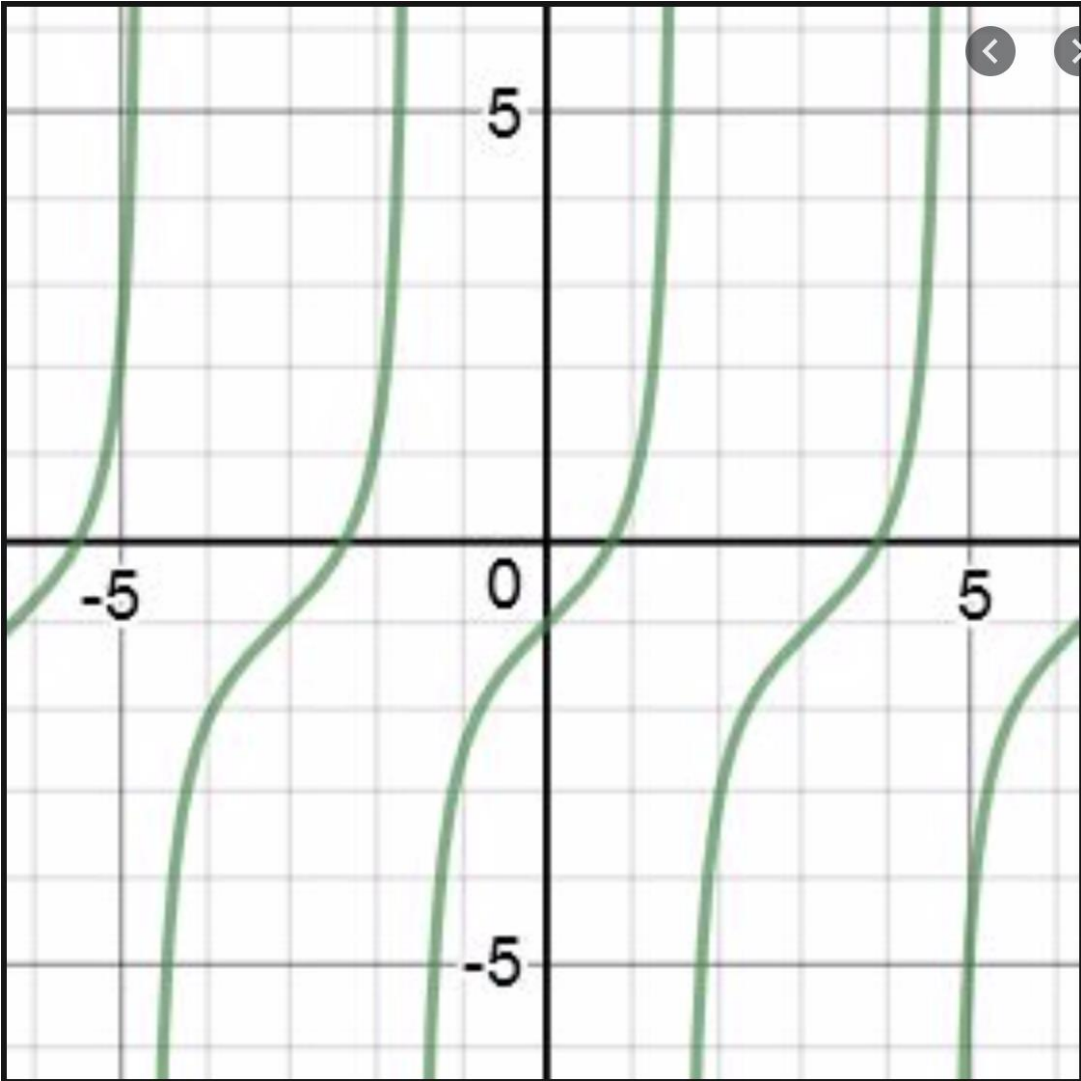
Write 2 equations for the graph below. One equation as sine and the other as cosine.



Write 2 equations for the graph below. One equation as sine and the other as cosine.



Write the equation for a tangent function.



On a particular Labor Day, the high tide in Southern California occurs at 7:12 A.M. At that time you measure the water at the end of the Santa Monica Pier to be 11 ft deep. At 1:24 P.M. it is low tide, and you measure the water to be only 7 ft deep. Assume the depth of the water is a sinusoidal function of time with a period of half a lunar day, which is about 12 hrs and 24 minutes. Write an equation to model the depth of the water.

The normal monthly Fahrenheit temperatures in Albuquerque, NM, are shown in the table below.  
(Month 1 = Jan, month 2 = Feb etc.)

Month	1	2	3	4	5	6	7	8	9	10	11	12
Temp	36	41	48	56	65	75	79	76	69	57	44	36

By hand, model temperature  $T$  as a sinusoidal function of time, using 36 as the minimum value and 79 as the maximum value.



Using the same data, use the regression capabilities on your calculator to find an equation for the data.

Month	1	2	3	4	5	6	7	8	9	10	11	12
Temp	36	41	48	56	65	75	79	76	69	57	44	36