Re: Sine or Cosine Wave Equation?

Source: http://sci.tech−archive.net/Archive/sci.math/2006−04/msg03134.html

- *From*: quasi <quasi@xxxxxxxx>
- *Date*: Sun, 16 Apr 2006 22:19:55 −0400

On Sun, 16 Apr 2006 21:53:09 EDT, Cookie Monster
<tha_shortest_shorty@xxxxxxxxxxx> wrote:

> Would someone check if I have the correct equation to this problem?
>
> A high tide of 6 feet occurs at 4:00 am and a low tide of 2.5 feet at 10:00am.Find the equation.
>
> I got the equation Y=sin(pi/3X +4)+4.25.
> I wonder if the equation is suppose to be a sine wave or a cosine wave. Help Please!

It could be either sine or cosine −− you can do it either way.

Using cosine is a little more natural since in the first phase, it
starts high and then decreases.

But there are several errors in your attempted formula.

Firstly, you didn't change the amplitude.

Given that you know the high and low wave heights, can you deduce the
amplitude?

Also, you have the wrong vertical shift.

The minimum should shift from what it was to what you want it to be,
right? With that idea, you should be able to deduce the vertical
shift.

It looks like you have the right period, but you need some parentheses
in your formula otherwise you will have the wrong phase shift.

The formula you want should be a vertical shift of a generalized sine
or cosine function. Using cosine, the form would be:

a*cos(k *(x−b))

Note that the b is inside the inner parentheses.

When you think you have the formula, use a graphing utility to verify.

quasi
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