## Honors Math 3

## Trígonometry

## PROBLEM TASK:

At midnight, the water at a particular beach is at high tide. At the same time a gauge at the end of a pier reads 10 feet. Low tide is reached at 6 AM when the gauge reads 4 ft .
a. Choose which trig function would be the best fit for this model (assuming midnight is $t=0$ ). Justify your choice using specific characteristics of trigonometric function graphs.
b. Determine the midline, amplitude and period using the above tidal information. You must show all computations and explain why you performed each computation.
c. Write a function based on parts one and two to represent the above tidal information.
d. If the times for high and low tides are reversed what (if anything) would change in the equation from part (c)? Justify your conclusion.
e. If you were instructed to let $t=0$ represent 9 pm , would your function in part (a) still be the most convenient choice? Why or why not? If not, convince your teacher what a better choice would be.

