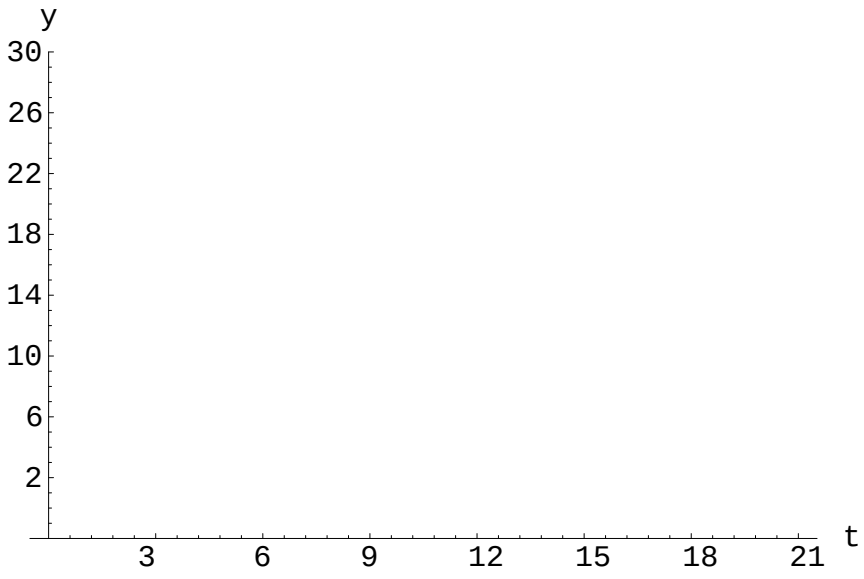
Math 026L.04 Spring 2002
Quiz #2 Name: _____

You have 20 minutes to complete this quiz which is worth 20 points. Calculators are permitted, but no other aids are allowed. Show all work neatly and in order, and clearly indicate your final answers. Answers must be justified whenever possible in order to earn full credit. When you do use your calculator, sketch all relevant graphs and write down all relevant mathematics.

1. (*7 points*) On March 18, 1998, the high tide in the Bay of Fundy was at midnight and the water level then was 26 feet. The very next tide was 6 hours and 48 minutes later and the water level then was 2 feet. Assuming the water level $y(t)$ varies sinusoidally, find a formula for $y(t)$. Show the graph of $y(t)$ on the set of axes below. What is the period of this function?



2. (*6 points*) Recall that $\sin^{-1}(x) = \arcsin(x)$ are just different notations for the same function. For each function given below, compute $\dfrac{dy}{dx}$.

(a) $y = \arcsin\left(x^2\right)$

(b) $y = \sin\left(\arcsin(x)\right)$

3. (*7 points*) A lighthouse is 2 km away from the long, straight coastline as shown in the figure below. Find the rate of change of the distance of the spot of light from the point O with respect to the angle θ.