MA 120 **Recitation 4: Trig Functions** **10/1/24**

Names (Printed):

Work on the problems below. Legibility, organization, and clearly stated reasoning are all important!

1. (For students to work on) At $7am$ at a certain spot on the beach, the depth of the water is measured to be $4ft$. At $10am$, it is low tide and the depth of the water measures $1ft$. The next low tide occurs at $10pm$.
   (a) Sketch a graph of $w(t)$, the depth of the water, measured in feet, t hours after $7am$.
   (b) Find a trigonometric model that describes $w(t)$.
2. (For the students to work on) You are on a plane that just lifted off the ground. After 1 min, the plane is at an angle of θ elevation from the ground and the plane has traveled $500ft$ in the air.
   (a) Write a function for the angle θ in terms of x, the distance the plane traveled horizontally, and a function for the angle in terms of y, the vertical distance up traveled.
   (b) What is θ if the horizontal distance traveled is $400ft$. what is the vertical distance y traveled?
   (c) what is $\tan(\frac{\theta}{2})$?