

**MTH 1210, FALL 2013**  
**DR. GRAHAM-SQUIRE**

SECTION 2.6 - IN CLASS ACTIVITY  
COMBINING FUNCTIONS

1. NAMES

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2. INSTRUCTIONS

Read the problem given below, then work on it with the other members of your group. You should give a complete answer with all of your work shown for each question. It is fine for different people to work on different parts of the question, but you should check each other's work since everyone in the group will receive the same grade for the assignment. If you have any questions, ask the other members of your group first. If all of you are stuck, everyone in the group must raise their hand in order to get help from the professor. Attach this as a cover sheet to the work you turn in.

**Exercise 1.** Suppose a plane is flying over a radar station, and it passes directly overhead at time  $t = 0$ . The plane is flying at a constant altitude of 7 miles above the ground, at a speed of 300 mi/hr. Let  $d$  be the horizontal distance (in miles) the plane is flying, and  $s$  be the diagonal distance (in miles) between the radar station and the plane.

(a) Draw a diagram to represent the situation. Make sure to label  $d$  and  $s$  on the diagram, as well as any other important information.

(b) Express the distance  $s$  as a function of the horizontal distance  $d$  that the plane has flown. Your function should look like  $s = \underline{\hspace{2cm}}$ .

(c) Express  $d$  as a function of the time  $t$  (in hours) that the plane has flown.

(d) Use composition of functions to express  $s$  in terms of  $t$ . Use mathematical notation to illustrate how you are doing the composition.