MAT 270 Quiz 3   Name_____
Constant Rate of Change
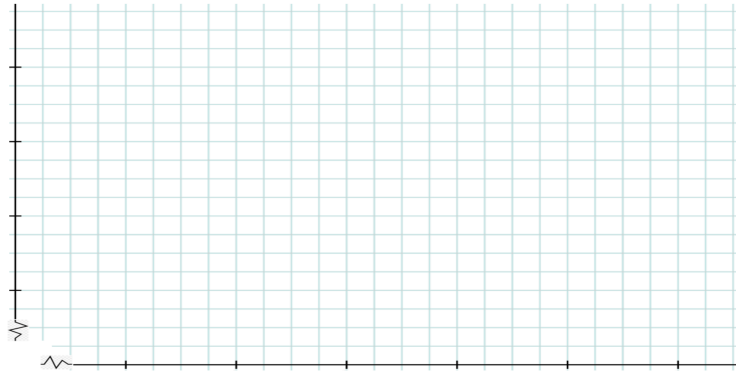
1) a) Connely can mow her lawn at a constant rate of 105 ft²/minute, which implies that every minute she can
   mow 105 ft². Write a sentence that gives a more comprehensive meaning of this value.

   b) If L is the total number of ft² that are mowed, and M is the number of minutes she has spent mowing since
   noon today, what mathematical statement is equivalent to your definition in part a)?

   c) Suppose she has mowed for M_0 minutes since noon and the total amount mowed is 784.6 ft². If she spends
   a little more time mowning, how much total area is mowed? Write an expression.

   d) Below, fully illustrate the part c) situation, if the entire x-axis interval displayed represents only a *moment* of
   time containing this situation. Your sketch should include:

   i) the two critical correspondence points, labeled with ordered pairs
   ii) a representation of *all* correspondence points of the relationship of L and M within the moment
   iii) representations of the changes involved, labeled symbolically and with expressions where possible
   iv) scales and units on the axes, with locations of all key values designated and labeled. (Use a whole
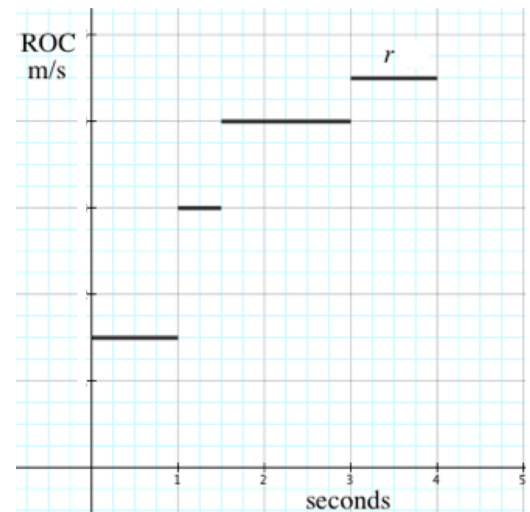   number scale for square feet of lawn mowed.)

2) The graph at right shows r, a function that gives rate of change of height
   in meters with respect to time for a rocket firework, t sec after it's
   launched from a 0.8 m tall concrete pedestal. (ROC values not given.)

   a) How many points does the displayed graph show? _____

   b) Highlight correspondence points of r for $t = 0.5$ sec and
      $t = 2$ sec on the graph, and label them with ordered pairs.

   c) Explain the meaning of the 2nd point ($t = 2$) in a sentence.

   d) In at most two sentences, describe the flight of the firework.

   e) Express the change in height of the firework from 1 to 1.5 seconds. _____
        (Hint: d$y = m$ dx, but variables x, y, and m aren't involved here.)

Name_____

Do not turn this sheet over until you are instructed to begin.