

## Writing Assignment

This writing assignment is to give you a chance to add ten points to your test score.

Here is the situation you are to address. Your cousin Billy Joe Jim Bob calls you up to ask for help on differentials but is not quite swift enough to understand the explanation over the phone. You agree to write him a letter taking him through the differential stuff. (If you prefer you may rename Billy Joe or change him to female for purposes of your letter).

Your explanation has two parts. In the first part you draw a graph and explain to BillyJJB where to find  $dx = \Delta x$ ,  $dy$  and  $\Delta y$  on the graph. You explain the relation between  $\Delta y$  and  $dy$  when  $\Delta x$  is small and why  $\Delta y$  is hard to find and why  $dy$  is easy to find, so it is useful to approximate  $\Delta y$  by  $dy$ . You explain why this can be useful when the size of an error in  $y$  needs to be below a certain level.

Next you present some kind of numerical example to BillyJJB that has some real world relevance cause BJJB tends to think very concretely and has no desire to find approximations to  $\sqrt{101}$  even though it is easy and fun. The more interesting and creative I think your example is the more of the ten points you get and the more grateful your uncle and aunt are for your help to BJJB.