Quiz #2, 9/6
Math 156 (Calculus I), Fall 2022

Problem 1 is worth 9 points (3 pts each part), and you get 1 point for free, for a total of 10 points. Remember to *show your work* on all problems!

1. The following questions are about "real world" interpretations of ways to combine old functions together to form new functions (like $f + g, fg, f \circ g$, et cetera).

   (a) The cost of buying x students each a sandwich is given by the function $f(x) = 5x$. The cost of buying x students each a juice box is given by $g(x) = 2x$. What function represents the cost of buying x students each a sandwich and a juice box? Explain.

   (b) Suppose that the total number of people employed in some small country's economy x months from today is given by the function $f(x) = 50,000 + 500x$. Also, x months from today, the average wage for a worker in that economy is given by $g(x) = 10,000 + 50x$. What function represents the total wages earned (i.e., by *all* workers) in that economy x months from today? Explain.

   (c) The amount of money (in dollars) you have after buying x candy bars is given by the function $f(x) = 100 - 2x$. If you put x dollars in a bank account, then the amount of money you will have after a year is given by the function $g(x) = 1.02x$ (because of interest). What functions represents the amount of money you have after a year if you buy x candy bars and then put your remaining money in a bank account? Explain.