

Grading and remarks for Lab 5

- 1 For (a) and (b) I awarded 0.5 for both domain and graph of f , 0.5 for the correct computation of f' , 0.5 for the domain of f' and 0.5 for the graph of f'

For part (c) I awarded 1 point for setting up the problem correctly (using the definition of derivative and using the fact that f is even to move the negative sign around) and I awarded 2 points for a complete and correct proof. I did analogously for (d). I did not award credit to those who computed a specific example (e.g. x^2 for f even and x^3 for f odd). Nowhere was written that a specific example was acceptable. Indeed it provides no proof and also represents a way easier exercise.

- 2 Each graph was worth 2 points. Per graph, all 3 correct was worth 2 points. I gave 1 point to those who paired correctly one function as derivative of another one (e.g.: the solution of (a) is red blue green; I gave 1 for things like blue green red, since it was noticed that green is the derivative of blue). In general I did not give credit for one or two correct functions, since it might still be that no pairing 'function with its derivative' was recognized. As stated in the exercise, I was looking for an explanation, so I gave no points to those who did not write one.

- 3 For (a) each part was worth 1 point. Per part I gave 0.5 for a correct procedure but minor algebra mistakes (e.g. 0.013 instead of 0.0013) and I awarded full credit for a correct numerical result.

For (b), in the first question I awarded 0.5 for understanding that the speed is the derivative of the position, I awarded 1 for using $h'(t)$ correctly to give the right numerical value. In the second question I awarded 0.5 for understanding that the maximum height corresponds to the instant of time at which the velocity is 0; I gave 1 point for providing a complete and correct answer to the question. In the third question I awarded 0.5 for understanding that such a time is a solution of $h(t) = 0$ (note, I did not give credit for using this formula in a conceptually wrong way, such as finding the correct time and then adding or subtracting something else) and 1 point for calculating correctly the solution; alternatively I gave 1 point for understanding from the physics of the problem that this time is twice the time (previously calculated) the stone takes for reaching the maximum height.

As general remark, please read the questions carefully and answer them! For instance, in part (b) I ask you about the maximum height reached by the stone. For a correct answer you need to find the time at which the stone reaches the maximum height, but such a time does not provide an answer to the the question, it represents partial work. Also, since I clearly stated I do not provide credit for answers without any explanation, I'd prefer you not to write anything than to provide a number coming from nowhere.

- 4 For each question I awarded 1 point for using correctly the quotient rule, i.e.

$$\left(\frac{f}{g}\right)' = \frac{f'g - fg'}{g^2}$$

but getting lost in the algebra. I awarded 2 points for a complete and correct answer. For (c) I did not award points for using an improper or intuitive explanation or for using the chain rule, since it was explicitly stated to use rules in 3.1 and 3.2.