

Grading and remarks for Lab 3

- 1 For each part I gave 1/1 for a fully correct answer, 0.5/1 if one kind of error occurred, 0/1 if two or more kinds of error occurred together. I graded accepting the definition of $\lim_{x \rightarrow x_0} f(x) = +\infty$ given both in the book and in the lab; on the other hand, I considered mixing them together to be a mistake.

Please notice that answers such as “yes, no, no,” or consisting of circling some words in a question, might sometimes communicate a full answer, but they are, in general, incomplete. Also, it is more likely to commit mistakes when you rush. Last but not least, it makes it difficult to grade; often, I simply cannot give any credit, since I cannot guess what is meant by half a word.

- 2 As in the previous exercise, I accepted both conventions about $\lim_{x \rightarrow x_0} f(x) = +\infty$. The only concerns in grading were the two pictures. I gave 1/1 if the overall behavior was understood, 0/1 if not (e.g. if the function sketched does not have a vertical asymptote or if it never crosses the x-axis).

Please note that writing $+\infty$ is a good habit, since omitting the $+$ sign might lead to mistakes or confusion in cases in which the sign of infinity is not evident.

Also, please note that writing $\lim_{x \rightarrow x_0} = a$ omitting $f(x)$ is bad notation. In general, try to avoid shorthand in writing, since it might lead to mistakes and misunderstanding.

As for some general advice, train yourselves in plotting graphs without technology, since it gives you a better understanding of what is happening.

- 3 For (a) I gave 1/1 for the right choice, 0.5/1 if some concern about the change of sign of x around 0 has been shown, 0 otherwise. I gave 0 even for the choice $-x$ and x , since we discussed the first day about inequalities and how they flip when we multiply by a negative number.

For (b) I gave 1/1 for a correct graph (even if coming from the choice $-x$ and x), 0.5/1 if at least $x \sin\left(\frac{\pi}{x}\right)$ has been sketched, 0/1 otherwise.

For (c) I gave 1/1 for a correct application of the squeezing theorem, regardless of whether or not the functions you picked were fine. I gave 0.5/1 if the discussion was partial, 0 otherwise.

- 4 From (a) until (e) I gave 1/1 for a correct answer, 0.5/1 for an answer with a conceptually right attempt but some algebra mistakes and 0/1 otherwise. I gave 0/1 for a guess coming from plugging in values. I really want you to understand that it is conceptually wrong!!! For the first half of (f) I took away 0.25 for any wrong answer (evaluation or one sided limit). For the last part I gave 2/2 for a fully correct answer; I gave 1.5/2 for a perfect graph with some discontinuities missing or for all the discontinuities and a graph with minor errors. I gave 1/2 if there are errors both in the graph and in the points of discontinuity, but there is an overall understanding. I gave 0.5/2 for some minor correct thing stated. If the limit to evaluate had been wrongly copied, I awarded 0.5 if the conceptual steps were correct.

NOTE: many of you did part (f) as if the function was $\sin(x)$ and not $[\sin(x)]$. In that case I gave 0 to the entire part. Note that in some cases the answers for the two different functions might match. It does not matter and I gave 0 anyway, since considering $\sin(x)$ represents a way easier exercise. Also, please pay attention to what the question is asking you. I noticed such mistakes even in copying the wrong limit to evaluate from 4(a) through 4(e).