

How to present your solutions

One thing we need to learn in this class is how to present a mathematical solution. The following are some suggestions.

1. *Understand the question.* If you were asked to find the antiderivative of $\sin x$ (which should be $-\cos x + C$) and you gave the answer $\cos x$ because you were thinking of derivative, then it is a serious mistake (it is not just forgetting a negative sign and the constant term C).
2. *Don't alter the problem.* If you were asked to evaluate $\int x \sin x dx$ and you solved the problem $\int \sin x dx$, then it is a serious mistake. The problem you solved is much easier than the given one and it does not require any special techniques, which was the purpose for the given problem, to test your understanding on the special techniques.
3. *Just the final answer is not enough.* You should derive a solution and **prove** that your solution is the right one, by showing your work. You should include enough details so that most students in this class could follow your solution without doing too much extra work. You should clearly indicate the formulas and techniques that you are using for solving the problem. Partial credits will be given according to how much you understand the materials, not just the final answer.
4. *Don't try to prove that you have no idea on how to solve the problem.* Writing nonsense can only hurt your reputation.
5. *Don't put things belong to your scratch paper on your solution paper.* Make your paper as clean as possible. If you treat it as a piece of junk, others (including your teacher) will too.
6. *Say what you mean and mean what you say.* Your solutions will be interpreted and graded based on what you wrote down on your solution paper, not your later verbal explanations to the teacher.
7. *An example to illustrate the grading principle.* Suppose the following problem is given to a fourth grade class, to test their understanding on additions and multiplications: $(1 + 2) \times (3 + 4) = ?$
Solution 1: $(1 + 2) \times (3 + 4) = 3 \times 7 = 21$, the perfect solution.
Solution 2: $(1 + 2) \times (3 + 4) = 3 \times 3 + 4 = 9 + 4 = 13$,
there is one mistake in this solution.
Solution 3: $(1 + 2) \times (3 + 4) = 3 \times 3 + 4 = 3 \times 7 = 21$,
there two mistakes in this solution and thus
it deserves less credit than Solution 2.
Solution 4: $(1 + 2) \times (3 + 4) = 21$,
there is no way to tell if mistakes in solution 3 are also made
here and thus it deserves no more credit than solution 3.