

About this template [5 points, Generic Textbook 0.1]

This is a L^AT_EXpset template made by Paolo Adajar (paoloadajar@mit.edu) in Summer 2021. I intend to use this template throughout grad school for consistent-looking psets (both for classes I take and classes I am TA for). It includes environments for problems, solutions, and personal reflections.

This template with many pre-installed packages, including:

- `amsmath`, `amsthm`, `amsfonts`, `amssymb`, `mathtools`, and `physics` for formatting math,
- `natbib` for citations,
- `graphicx`, `tabularx`, `caption`, `subcaption`, and more for formatting, and
- `version` for excluding problems using `\excludeversion{problem}` (with similar commands for both solutions and reflections).
- `listings` for including code, with Stata markdown as defined by [satejsoman](#).

To use this package, add `\input{paolo-pset.tex}` to the preamble of your L^AT_EX file. To fill in the header with relevant information, use `\newcommand`, define `\name`, `\email`, `\classname`, `\subject`, `\instructor`, `\assignment`, and `\duedate`. Optionally, define `\collaborators`.

- (a) [4 points, MWG 1.1] This is the text of the first subproblem, which also uses the problem environment. The `\points` command can be passed as an optional argument to the problem environment to denote the number of points (and optionally the problem source). The syntax `\problem{\points[source]{num-points}}`. This is recommended for subproblems. I recommend using `\section*{Problem n \points[source]{num-points}}` to denote each problem.

SOLUTION: This is the solution environment. It can include both inline math, like $E = mc^2$, and display math text:

$$\sum_{i=1}^{\infty} i = 1 + 2 + 3 + \cdots = -\frac{1}{12}$$

The box that surrounds the solution environment will continue across a page break (if needed), as demonstrated with this solution.

¹Collaborator(s): Alyssa P. Hacker ([aphacker](#)), Ben Bitdiddle ([bitdiddle](#))

Solutions can also use theorems and proofs, following the `amsthm` package, such as

Theorem 1 (Pythagoras). For a right triangle with legs of lengths a and b and hypotenuse of c ,

$$a^2 + b^2 = c^2.$$

Proof. Intermediate proofs will end with an empty box (`\square`). □

After intermediate theorems and proofs, you're ready to end your solution. The end of your solution will automatically be marked with a black box. If your solution ends with a `displaymath`, `enumerate`, or `itemize` environment, use `\qedh` to end it with a black box without adding extra space at the end. (This is a modified version of `\qedhere` from `amsthm`). ■

REFLECTIONS: This `reflection` environment, as expected, is used for reflections on solutions. Examples of things to include include:

- Failed solution paths taken
- How the correct solution was found
- What point this question has, pedagogically (and any concepts that were missed)
- Related problems that may be interesting, useful, or cool

The hope is that these reflections will help with my own understanding of this content.

Usage Notes

This section documents a few random usage notes for this template, and a few issues I'm still trying to resolve.

- You can't by default use a `table` environment (or any other `float` environment) inside of the `solution` environment. This is currently solved using the `Float` package, and using `\begin{table}[H]` to write a table. I'm still looking for a "better" solution to this.
- As a weird quirk, if your solution uses the `align` environment to end a solution, the proper way to mark the solution with a black box (rather than an empty box) is by adding `\tag*{\qedh}` at the end of the last line. Not sure why the `align` environment doesn't like my attempted redefinition of `\qedsymbol`.
- In circumstances I can't exactly reproduce, there will sometimes be an extra line break between a problem and solution environment. Not sure what causes this issue — perhaps it's `LATEX` just trying to have consistent vertical spacing.

Problem 2

This section is simply to further demonstrate how `paolo-pset` looks in practice.

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SOLUTION: Suspendisse laoreet ultrices hendrerit. Aenean accumsan ipsum metus, vel venenatis urna volutpat a. Vestibulum feugiat tincidunt metus, id bibendum lectus lacinia interdum. Etiam vitae purus a ante tempus cursus nec non elit. Proin sollicitudin ipsum non tincidunt venenatis. Mauris euismod massa quam, ut volutpat dui pharetra non. Curabitur bibendum a leo nec tristique. Aenean eu aliquam nisi. Proin lobortis nisi non nisi condimentum tempor. Donec a elementum ligula, ut consequat velit. Mauris vitae gravida nisi. Nunc convallis feugiat molestie. Curabitur sed ex hendrerit, tincidunt odio a, tincidunt sapien. ■

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- (b) Text of problem.

SOLUTION: Text of solution. ■

REFLECTIONS: Text of reflection.

- (c) Text of problem.

- (i) Text of subproblem.

SOLUTION: Text of solution.



REFLECTIONS: Text of reflection.

(ii) Text of subproblem.

SOLUTION: Text of solution.



REFLECTIONS: Text of reflection.

(iii) Text of subproblem.

SOLUTION: Text of solution.



REFLECTIONS: Text of reflection.