

## Problem Set # Submission

**Instructions:** You **must** typeset your solution in LaTeX using the provided template. Please submit your problem set via Gradescope. Include your name and the names of any collaborators at the top of your submission.

**Name:** Put your name here.

**Collaborators:** List your collaborators here.

---

**Problem 1**

Put your solution here. Each solution starts on a new page.

Don't forget the optional feedback (which also serves as an example of how to do lists), and don't forget to mark pages for each problem on Gradescope.

Before you get started, it may be helpful to look up a latex tutorial for doing things like formatting equations and math notation. Here are a few pointers to get you started. You can do equations like this:  $y = mx + b$ . If you want the equation on a separate line, do this:

$$y = mx + b$$

You can use this to get a font that looks better when using multi-letter variable names, e.g.,  $\mathcal{A}$ ,  $\mathcal{B}$ ,  $\mathcal{K}$ ,  $\mathcal{E}$ ,  $\oplus$ ,  $\cdot$ ,  $\times$ ,  $\vee$ ,  $\wedge$ ,  $\cup$ ,  $\leq$ ,  $\geq$ ,  $\neq$ ,  $\subset$ ,  $\subseteq$ ,  $\notin$ ,  $\pi$ ,  $\Pi$ ,  $\sigma$ ,  $\Sigma$ ,  $\lambda$ ,  $\alpha$ ,  $\beta$ ,  $\mathbb{Z}$ ,  $\mathbb{G}$ ,  $\varphi$ ,  $\epsilon$ ,  $\varepsilon$ ,  $\leftarrow$ ,  $\xrightarrow{\mathbb{R}}$ ,  $\rightarrow$ ,  $\perp$ . You can do subscripts and superscripts like this:  $y_1 = x^1 \cdot y^{12}$ . Don't forget to use the braces if there's more than one character in the superscript, it looks like this:  $y^1 2$ . Some characters need to be escaped:  $\{$ ,  $_$ . You can do fancy fractions too:  $\frac{1}{2}$ .

Please remove this mini-tutorial of examples before putting in your solution. Replace the red # at the top with the number of the problem set you are submitting.

## Problem 2

### **Problem 3**

#### **Problem 4**

**Optional Feedback [5 points].** Please answer the following questions to help design future problem sets. You are not required to answer these questions (the points are free), and if you would prefer to answer anonymously, please use the anonymous feedback form. However, we do encourage you to provide feedback on how to improve the course experience.

- (a) Roughly how long did you spend on this problem set?
- (b) What was your favorite problem on this problem set?
- (c) What was your least favorite problem on this problem set?
- (d) Any other feedback for this problem set? Was it too easy/difficult?
- (e) Any other feedback on the course so far?