

SUMS L^AT_EX Workshop Handout FA23

SUMS at UCSD

October 23, 2023

1 Introduction to Lists

- This is a bulleted list.
- Each line is made with a command, and ended with another.
- Try make another list, but this time numbered.

Make a numbered list here with three items:

1. 1
2. hi
3. hello

2 Equations

Fractions can be added using $\frac{\textit{numerator}}{\textit{denominator}}$.

The dollar signs and other math environments put you into math mode.

The quadratic formula is $\frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$.

The quadratic formula is

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
$$\frac{-b \pm \sqrt{b^2 + 4ac}}{2a} \tag{1}$$

$$\frac{-b \pm \sqrt{b^2 + 4ac}}{2a} \tag{2}$$

Notice that the above two equations are numbered. The following is not:

$$\frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$$

3 Writing Equations

Copy the following equations:

Equation Exercises

Copy the following: *Hint:* Look things up!

$$1) \quad -\frac{\hbar^2}{2m} \nabla^2 \psi + V(\mathbf{x})\psi = E\psi$$

$$2) \quad \Phi(x) = \frac{1}{1-x-x^2} = \sum_{n=0}^{\infty} F_n x^n$$

$$3) \quad {}^k a \equiv \underbrace{a^{a^{\cdot^{\cdot^{\cdot^a}}}}}_{k \text{ times}}$$

Challenge Problem:

$$4) \quad \mathbf{1}_{\mathbb{Q}}(x) = \begin{cases} 1 & x \in \mathbb{Q} \\ 0 & x \notin \mathbb{Q} \end{cases}$$

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Copy the equations in the slide/image:

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Challenge Problem:

$$4) \quad \mathbf{1}_{\mathbb{Q}}(x) = \begin{cases} 1 & x \in \mathbb{Q} \\ 0 & x \notin \mathbb{Q} \end{cases}$$

4 Matrices and Tables

Copy the following matrices and tables:

Matrix and Table Exercises

Copy the following: *Hint:* Look things up and ask!

$$1) \quad I_3 = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$2) \quad x^T = (1 \quad 2 \quad \dots \quad n)$$

| Number | Factors |
|--------|--|
| 12 | 1, 2, 3, 4, 6, 12 |
| 60 | 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60 |

Challenge Problem:

| My Tic-Tac-Toe | | |
|----------------|---|--|
| X | | |
| X | O | |
| | | |

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Copy the matrices/tables in the slide/image:

$$1) \quad I_3 = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

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Challenge Problem:

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| X | | |
| X | O | |
| | | |