Use Case: Render Mathematical Formulas & Notations in LaTeX Format

**Traceability ID: RENDER-LATEX-TECHNICAL**

**Relevant Requirements:**

### 3.1.4  Rendering LaTeX

### 3.4.1  Text input

### 3.4.3  Image output

### 3.1.7  Connecting to Discord messaging layer

Non-functional

### 3.3.1  Execution timeout

**Primary Actor:** User

**Pre-conditions:** User is in a channel for which the ResearchRealms bot has access to messages, and that their bot instance is running.

**Post-conditions**: The user is presented with a rendered image version of the LaTeX syntax equation that makes up the user input.

**Basic Flow or Main Scenario:**

1. The user enters a LaTeX equation / expression into the current channel, preceded by the **!latex** command string.
2. The user receives the rendered version of the equation formatted in a visually convenient way and with rendered concepts and abstractions present in mathematics / sciences such as summations, subscripts, Greek letters, etc.

**Alternate Flows:**

1. The user is presented with an error detailing what went wrong. This can be one of:
   1. Exception due to render timeout (program took too long to finish)
   2. Exception due to malformed input not corresponding to the syntactically correct LaTeX formatting (user error)

**Exceptions:** Programmatic Exceptions are returned as formatted messages to the source channel. The types of possible exceptions are detailed in **Alternate flows**.

**Related Use Cases:** (disjoint)

**REVISION HISTORY**

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| --- | --- | --- |
| Date | Description | By |
| Mar 17, 2020 | Added Initial Use Case | Andrii Dobroshynskyi |