

Easy LaTeX for Math Teachers

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Introduction

What is LaTeX?

- LaTeX is a markup language for writing math
- LaTeX vs Word Processors

Input

```
1 \documentclass[12pt]{article}
2 \usepackage{geometry}
3 \usepackage{graphicx}
4 \usepackage{amssymb}
5
6 \begin{document}
7
8 \section*{Algebra Review}
9
10 Complete the following algebra review. Good luck!
11
12 \begin{enumerate}
13 \item Use the quadratic formula
14 \[
15 x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}
16 \]
17 to find the roots of  $f(x) = x^2 + 8x + 4$ .
18
19 \vspace{1cm}
20
21 \item Expand the following logarithmic expressions as much as possible:
22 \begin{enumerate}
23 \item  $\log_b(x^2 y)$ 
24
25 ..
```

Output

Algebra Review

Complete the following algebra review. Good luck!

1. Use the quadratic formula

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

to find the roots of $f(x) = x^2 + 8x + 4$.

2. Expand the following logarithmic expressions as much as possible:

(a) $\log_b(x^2 y)$

LaTeX for Common Teaching Platforms

- You DON'T have to learn all of this to help you with your teaching!
- Save time and make your math expressions look better!
- We just need common math functions (trig, etc) and math symbols.
- Common Teaching Platforms:
 - Examples: Desmos, Formative, Word, Canvas, Kami, Gmail

Popular Commands Cheat Sheet

- **Algebra**
- Arithmetic Operations (add, subtract, multiply, divide, add, subtract) `+`, `-`, `\times`, `\div`
- Fraction `\frac{numerator}{denominator}`
- Inequalities `<`, `\leq`, `>`, `\geq`
- Not equals `\neq`
- Exponents x^2 , x^3
- Subscripts a_1 , a_2
- Square Root `\sqrt{x}`
- n-th roots `\sqrt[n]{x}`
- Set Notation `\{ \}`
- Empty Set `\emptyset`

Need something else? Try googling or using Detexify where you can draw your desired symbol: <https://detexify.kirelabs.org/classify.html>

Popular Commands Cheat Sheet (continued)

• Trigonometry/Precalculus

- Trig Functions $\sin(x)$, $\cos(x)$
 $\tan(x)$, $\sec(x)$, $\csc(x)$, $\cot(x)$
- Degrees 90°
- Exponential e^x
- Logarithms $\log_a(x)$, $\ln(x)$
- Sigma Notation $\sum_{n=1}^{10}$

Calculus

- Limit $\lim_{x \rightarrow a}$
- Integral $\int_a^b f(x) dx$
- Infinity ∞

Other Math Symbols

- Greek Letters (theta, pi, etc.)
 θ , π etc.
- Right arrow \rightarrow

Need something else? Try googling or using Detexify where you can draw your desired symbol: <https://detexify.kirelabs.org/classify.html>

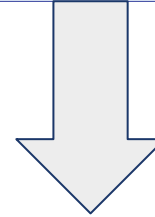
Formative

- Highlight your code and hit the “LaTeX” button.
- Preview using eyeball icon in top right
- Adding `\displaystyle` in front of certain commands (`\sum`, `\frac`, `\lim`) can make the formatting more ideal.

1 Show Your Work

B *I* U x_2 x^2 \LaTeX H1

Expand and evaluate the sum `\displaystyle\sum_{i = 1}^4 i^2` $\sum_{i=1}^4 i^2$





1

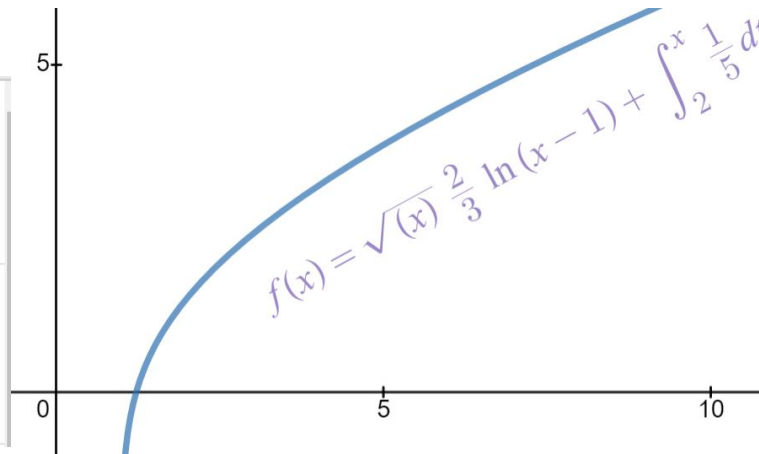
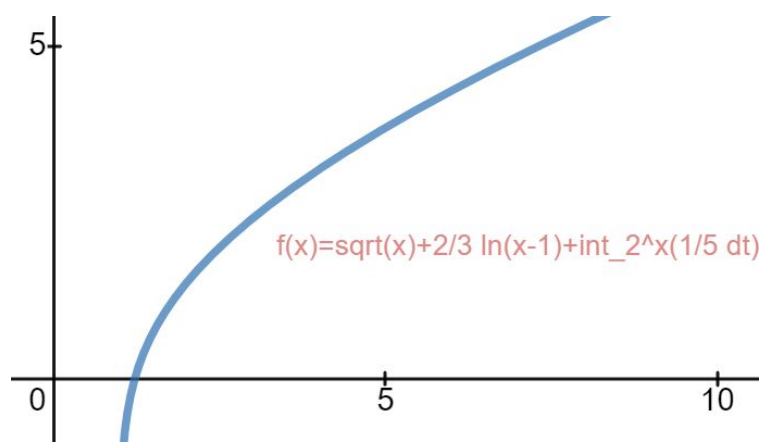
Expand and evaluate the sum $\sum_{i=1}^4 i^2$

Desmos

Label the functions

Use `` (the key to the left of number 1)

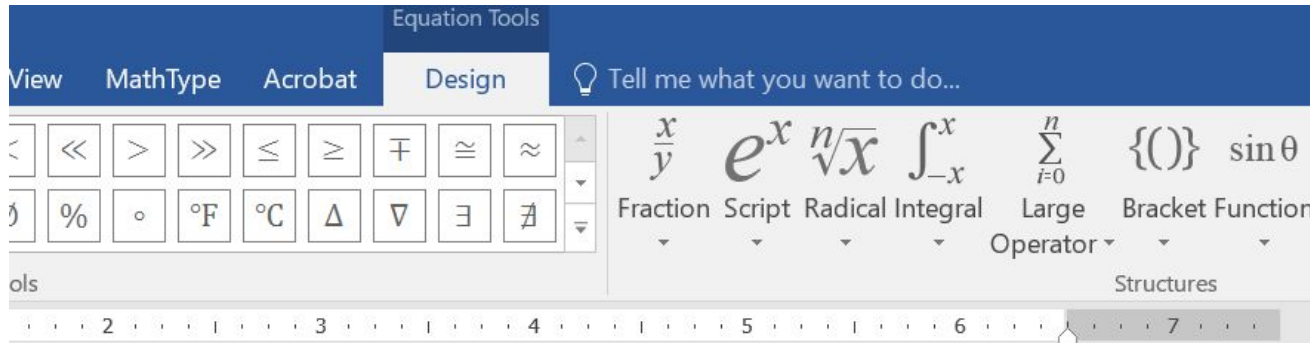
1		$f(x) = \sqrt{x} + \frac{2}{3} \ln(x-1)$	✕
2		(8,3)	✕
		<input checked="" type="checkbox"/> Label: <code>f(x)=sqrt{(x)} \frac{2}{3} \ln{(x-1)}+\int</code>	



Microsoft Word

- Equation Editor
- Use LaTeX code for shortcuts
- Create equations without “clicking”

- Integral “`\int_a^b`”[space]
- (should also work for `\sum` `\lim`)
- `\infty` `\pi` `\epsilon` `\varepsilon`
`\neq` [space] (My Fav!)
- Fraction “`a/b`”[space]
- “`to`” (or simply “`->`”)



Gmail

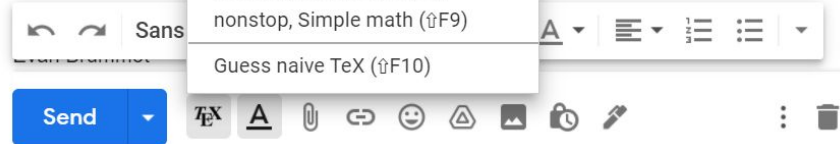
- Download TeX for Gmail extension on Google Chrome:
<https://chrome.google.com/webstore/detail/tex-for-gmail/ginmclkoajdlijnfmhbnhaahilafoeji?hl=en>
- In an open email, hit the TeX button on the bottom navigation and then select “nonstop, Rich math”
- Don’t forget to include \$ immediately before/after your code!

Hi Johnny,

Even when a quadratic equation doesn't factor, we can still find its roots by using the quadratic formula. The roots of the parabola $y = ax^2 + bx + c$ are given by

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

Hope this helps!
Mr. Brummet



The screenshot shows the Gmail compose interface. At the top, the text "Hi Johnny," and "Even when a quadratic equation doesn't factor, we can still find its roots by using the quadratic formula. The roots of the parabola $y = ax^2 + bx + c$ are given by" is visible. Below this, the LaTeX equation $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ is present. The Gmail compose toolbar is shown, with the TeX extension button (a stylized 'T' with a subscript 'X') highlighted. A dropdown menu is open, showing options: "once, Rich math (F8)", "once, Simple math (F9)", "nonstop, Rich math (⇧F8)", "nonstop, Simple math (⇧F9)", and "Guess naive TeX (⇧F10)". The "nonstop, Rich math" option is selected. The "Send" button is visible on the left.



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Canvas

- Tips for using LaTeX on Canvas:
- Write math equations on Canvas module pages (Insert Equation and click on Advanced)
- Write Canvas Quiz equations $\backslash(ax^2 + bx + c \backslash)$

Switc

```
\displaystyle\sum_{n=1}^{\infty} \frac{1}{n} = 1 + \frac{1}{2} + \frac{1}{3} + \dots
```

Harmonic series $\sum_{n=1}^{\infty} \frac{1}{n} = 1 + \frac{1}{2} + \frac{1}{3} + \dots$

Thank you!