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## Course Code 123: Assignment n

This `TEX` file is the learning version, prepared by Kat Matheson.  
I suggest beginners use L<sup>A</sup>T<sub>E</sub>X Workshop in VS Code for compilation.  
Any questions should be directed to `g3.matheson@gmail.com`

For the template, simply delete everything below the comment `%%delete-me` and save your own.  
Make sure to keep the `\end{document}` line, though!

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## 1 LATEX

LATEX has odd spacing.

if you write a line and continue on the next one, you might notice a problem  
if you write a line and something else

and continue on the next one, you might notice it's fixed, sort of?

what if... hmmmmmm

now?

how about now?

where are my spaces?

i guess i only need one...

this is normal text, **but this is bolded**.

this is normal text, *this is italicized*, and *this is emphasized*

this is normal text, `and this is cool math-ish pc-looking text`

this is large this is Large

this is large with spacing from

this is Large

over here

weeeeeeeeeeeeeeee

weeeeeee

## 2 Math

a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z

1,2,3,4,5,6,7,8,9,0

$a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z$

1, 2, 3, 4, 5, 6, 7, 8, 9, 0

$$a, b, c = 1, 2, 3 = \sum_{i=1}^j \int_0^\infty e^{ix} dx$$

greek letters for variables

$\alpha, \beta, \gamma, \sigma, \theta, \epsilon, \varepsilon$

math symbols

$\sum_{i=1}^n, \prod_{i=1}^n, \bigcap_{i=1}^n, \bigcup_{i=1}^n$

$a + b, a - b, a \pm b$

$\frac{a}{b}, a/b$

$a > b, a \geq b, a < b, a \leq b$

$a \neq b, a \sim b, a \approx b, a \simeq b$

$a \cdot b, a \times b, a * b$

$a^b, a^{2b}, a^2b$

$a_b, a_{2b}, a_2b$

$A \cup B, A \cap B, A \setminus B$

$A \subset B, A \subseteq B, A \supset B, A \supseteq B$

$\in, \notin$

$\forall, \exists, \implies, \iff, \iff$

$a \wedge b, a \vee b$

$\mathbb{P}(a+b) < \mathbb{E}(c \pm d)$

$x \in \mathbb{N}, y \in \mathbb{R}, z \notin \mathbb{Z}, \alpha \in \mathbb{Q} \setminus (\mathbb{N} \cap \mathbb{Q}^c)$

and so on ...

and so on ...

math functions

$\sin(x), \cos^2(x), \tan(\theta)$

$e^{x_i^2}, \log_2(x)$

$$f'' = f^{(2)} = \frac{d^2 f}{dx^2} \neq \frac{\partial^2 f}{\partial x \partial y}$$

math auto-sizing brackets

$(2 + 2)$

$\left[ \left( 2 + \frac{1}{2} \right) \right]$

$\left\{ ((2 + 2)) > \bigcap_{i=1}^n \frac{\sum_{i=1}^n (i+1)^2}{\theta_1} \right\}$

$$\left( 1 + \bigcap_{i=1}^n \frac{\sum_{i=1}^n (i+1)^2}{\theta_1} \right)$$

math comments

$a = b$  because science

$and d = e$  because

$b = c$

according to my mom

$$x = y$$

$\sim \theta - 3$  because i said so

$= z + 1$  because i said so

$< z + 3$  because i said so

$$x = 2$$

$$i = 1$$

$$x = 3$$

$$i = 2$$

matrices

$$\begin{bmatrix} 0, 1, 2 \\ 3, 4, 5 \\ 6, 7, 8 \end{bmatrix} \begin{pmatrix} 0, 1, 2 \\ 3, 4, 5 \\ 6, 7, 8 \end{pmatrix}$$

cases

$$f(x) = \begin{cases} \frac{1}{2} & \text{if } x > 0 \\ \theta_0 & \text{if } x = 0 \\ 0 & \text{otherwise} \end{cases}$$

Examples

$$\sum_{i=1}^n \left( \frac{x_i + y_i}{2^i} \right)^{i-1}, \quad \frac{\sum_{i=1}^n x_i}{n}, \quad \frac{\int_0^1 \frac{a}{x^{-2}} dx}{2}$$