

SOME MATHEMATICUL RESULTS

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← pick a nice title

← replace with your name

1. GETTING STARTED

Here we go. This is a sentence which just rambles on long enough so that you can see what the shape of a paragraph is.

And here is the next paragraph.

2. SIMPLE MATH

Finally, some math:

$$\left. \begin{aligned} \ell &= r\theta \\ A &= \frac{1}{2}r^2\theta \end{aligned} \right\}$$

change θ to another Greek letter & r to R or ρ

$$A(\Delta) = \frac{1}{2}ab \sin \theta = \sqrt{(s-a)(s-b)(s-c)}$$

insert extra factor s

$$\frac{\cos A}{a} = \frac{\cos B}{b} = \frac{\cos C}{c}$$

correct to "Law of Sines"

$$c^2 = a^2 + b^2 - 2ab \sin C$$

correct to "Law of Cosines"

truth = beauty

Create your own

brunch = breakfast + lunch + cantaloupe

" "

$$a + ar + ar^2 + \cdots + ar^N = a \left(\frac{1 - r^{N+1}}{1 - r} \right)$$

write RHS as two terms.

3. LESS SIMPLE MATH

Permutations are

$${}_nP_k = \frac{n!}{(n-k)!}$$

while combinations are

$${}_nC_k = \binom{n}{k} = \dots$$

The series $\sum_{n=1}^{\infty} 1/n^p$ converges if and only if $p > 1$.

For each $n \in \mathbb{N}$, define a function $f_n : \mathbb{R} \rightarrow \mathbb{R}$ by

$$f_n(x) = \begin{cases} 1 & \text{if } |x| \geq 1/n \\ n|x| & \text{if } |x| < 1/n \end{cases}$$

The gradient is defined by

$$\nabla f = \begin{pmatrix} \frac{\partial f}{\partial x} \\ \frac{\partial f}{\partial y} \\ \frac{\partial f}{\partial z} \end{pmatrix} = \frac{\partial f}{\partial x} \vec{i} + \dots$$

Compute

$$\lim_{x \rightarrow -\infty} \frac{\sqrt{4x^2 + 1}}{3x - 1}.$$

What is y' if

$$y = \left(x + \frac{1}{x^2}\right)^{\sqrt{7}}?$$

$$(1) \quad \sum_{j=1}^n j = \frac{n(n+1)}{2}.$$

Say $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ is a linear transformation which satisfies

$$T\left(\begin{bmatrix} 1 \\ 1 \end{bmatrix}\right) = \begin{bmatrix} 2 \\ 3 \end{bmatrix} \quad \text{and} \quad T\left(\begin{bmatrix} 1 \\ -1 \end{bmatrix}\right) = \begin{bmatrix} 0 \\ 5 \end{bmatrix}.$$

Then $T\left(\begin{bmatrix} x \\ y \end{bmatrix}\right) = \dots?$

4. CONCLUSION

In ??? we gave simple equations, in ??? they were not so simple.

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put in correct formula
in place of ...
put in $\Leftrightarrow$ for "if and only if"

modify to make your
own (piecewise) sequence
of functions

complete the RHS.

change the - as of function

modify the exponent
to $\sqrt[7]{\pi}$ and x to z

change ...
to the correct
matrix-vector
product

change ???
to section references

replace with your affiliation and address,