Mathematics in Latex - Part 2

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1 Sum symbol

1.1 Inline math

$\sum_{n=0}^{\infty} \frac{1}{n^2+1}$ Some random text.

1.2 Display math

$$\sum_{n=0}^{\infty} \frac{1}{n^2+1}$$

2 Integral symbol

2.1 Inline math

$\int_0^1 x^2 dx$ Some random text.

2.2 Display math

$$\int_0^1 x^2 dx$$

3 Double integral symbol

3.1 Inline math

$\iint_s x^2 + y dx dy$ Some random text.

3.2 Display math

$$\iint_s x^2 + y dx dy$$

4 Limit symbol

4.1 Inline math

$\lim_{x \to 1} x$ Some random text.

4.2 Display math

$$\lim_{x \to 1} x$$

5 Misc symbols

5.1 Inline math

$\max_{n \in \{1,2,3\}} n, \min, \sup, \inf, \limsup, \liminf$ Some random text.

5.2 Display math

$$\max_{n \in \{1,2,3\}} n$$

6 Multiline math

$$\begin{aligned} f(x) = 2x + 2x^2 + 3x^3 + 4xy \\ + 2x + 2x^2 + 3x^3 + 4xy \\ + 2x + 2x^2 \end{aligned} \tag{1}$$

7 The align environment

$$\begin{aligned} 2x + 3y + 3z + w &= 2 & 3x + 4y + 1z &= 4 \\ x + 4y + 3z + w &= 3 & -x - y - z - w &= 3 \end{aligned} \tag{2}$$

7.1 Align continued

$$\begin{aligned} f(x) &= 3x + 3y - 2x && (3) \\ &= 3y && (4) \end{aligned}$$

8 Some formatting commands

8.1 Adding extra spaces

$$\frac{x-1}{x-1} = 1 \quad \forall x \neq 1$$

$$f(x) = \int \sin(x)\, dx$$

9 Modifying parentheses

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10 Math fonts

10.1 Bold font

$\mathbf{a}$

10.2 Caligraphy font

$\mathcal{T}$

10.3 Blackboard-bold font

$\mathbb{R}$

10.4 Bar symbol

$\bar{a}$

10.5 Overline symbol

$\bar{a}\ \overline{ab}$

10.6 Dot symbol

$\dot{f}$

10.7 Prime symbol

f', f'', f'''

11 Matrices

11.1 Default - no boundaries

$$A = \begin{matrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \end{matrix}$$

11.2 With parentheses

$$A = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \end{pmatrix}$$

11.3 With brackets

$$A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \end{bmatrix}$$

11.4 With vertical bars

$$A = \begin{vmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \end{vmatrix}$$

12 Cases

$$|x| = \begin{cases} x & \text{for } x > 0 \\ 0 & \text{for } x = 0 \\ -x & \text{for } x = 0 \end{cases}$$

13 Theorems

Theorem 13.1 (My Theorem)**.** *A theorem.*

Definition 13.2. A definition.

Definition 13.3. Another definition.

Remark. A remark.

14 Proofs

Proof. A Proof □