Writing Complex Math

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1 Introduction

Notice that sum for inline and display math is different: $\sum_{n=0}^{\infty} \frac{1}{n^2}$.

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

Same for integral. int for single, iint for double integral: $\iint_S x^2 y dy dx$

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$\lim_{x \to 1} x$

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

2 Multiple lines

$$f(x) = 2x + 1$$

$$f(x) = 0+x+2x^2+3x^3+4x^4+5xy+0+x+2x^2+3x^3+4x^4+5xy+x+2x^2+3x^3+4x^4+5xy+0+x+2x^2+3x^3+4x^4+5x$$

$$\begin{aligned} f(x) &= 0 + x + 2x^2 + 3x^3 + 4x^4 + 5xy + 0 \\ &\quad + x + 2x^2 + 3x^3 + 4x^4 \\ &\quad + 5xy + x + 2x^2 + 3x^3 + 4x^4 + 5xy + 0 + x + 2x^2 + 3x^3 + 4x^4 + 5xy \end{aligned} \quad (1)$$

If you dont want to have the number at the end, ask *.

$$\begin{aligned} f(x) &= 0 + x + 2x^2 + 3x^3 + 4x^4 + 5xy + 0 \\ &\quad + x + 2x^2 + 3x^3 + 4x^4 \\ &\quad + 5xy + x + 2x^2 + 3x^3 + 4x^4 + 5xy + 0 + x + 2x^2 + 3x^3 + 4x^4 + 5xy \end{aligned}$$

$$\begin{aligned} 2x + 3y + 4z - w &= 3 & \qquad x - 2y - z + 5w &= -4 \\ x + y + z - w &= 1 & \qquad x + y &= -10 \end{aligned} \tag{2}$$

$$\begin{aligned} f(x) &= (3x + 4)(x + 2) \\ &= 3x^2 + 10x + 8 \\ &= 8 + 10x + 3x^2 \end{aligned} \tag{3}$$

See (2) and (3)
Notice read the img to see more math.
Additionally check out the 2 links here:

- `https://tex.stackexchange.com/questions/77589/what-do-the-pieces-of-latex-left-and-right-respectively-mean`
- `https://www.overleaf.com/learn/latex/Spacing_in_math_mode`
- `https://www.overleaf.com/learn/latex/Brackets_and_Parentheses`

Notice that *left* and *right* cannot be used in *multline* env. We must change to *big* or *Bigg*.