

WPG

Practical L^AT_EX Tutorial # 22

Objectives

- Aligned Formulas
 - Aligned Environment
 - Simple Alignment
 - Annotated Alignment
 - Annotated Alignment Integration Example
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Simple Alignment

Align environment with each equation numbered.

$$\begin{aligned}x_1 - 2x_2 - x_3 + 3x_4 &= 0 & (1) \\-2x_1 + 4x_2 + 5x_3 - 5x_4 &= 3 & (2) \\3x_1 - 6x_2 - 6x_3 + 8x_4 &= 2 & (3)\end{aligned}$$

Align environment to hide equation numbers with the `\notag` command.

$$\begin{aligned}x_1 - 2x_2 - x_3 + 3x_4 &= 0 & (4) \\-2x_1 + 4x_2 + 5x_3 - 5x_4 &= 3 \\3x_1 - 6x_2 - 6x_3 + 8x_4 &= 2\end{aligned}$$

Hidding all the equation numbers by `align*` environment.

$$\begin{aligned}x_1 - 2x_2 - x_3 + 3x_4 &= 0 \\-2x_1 + 4x_2 + 5x_3 - 5x_4 &= 3 \\3x_1 - 6x_2 - 6x_3 + 8x_4 &= 2\end{aligned}$$

Annotated Alignment

$$\begin{aligned}\lim_{x \rightarrow c} (x^3 + 4x^2 - 3) &= \lim_{x \rightarrow c} x^3 + \lim_{x \rightarrow c} 4x^2 - \lim_{x \rightarrow c} 3 && \text{Sum and Difference Rules} \\&= c^3 + 4c^2 - 2 && \text{Power and Multiple Rules}\end{aligned}$$

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Annotated Alignment | Integration Exmample

$$\begin{aligned}
 \int_0^{\pi/4} \frac{dx}{1 - \sin x} &= \int_0^{\pi/4} \frac{1}{1 - \sin x} \cdot \frac{1 + \sin x}{1 + \sin x} dx \\
 &= \int_0^{\pi/4} \frac{1 + \sin x}{1 - \sin^2 x} dx \\
 &= \int_0^{\pi/4} \frac{1 + \sin x}{\cos^2 x} dx \\
 &= \int_0^{\pi/4} [\sec^2 x + \sec^2 x \tan x] dx \\
 &= (\tan x + \sec x)_0^{\pi/4} \\
 &= (1 + \sqrt{2} - (0 + 1)) \\
 &= \sqrt{2}.
 \end{aligned}$$

Multiply and divide
by conjugate.

Simplify.

$$1 - \sin^2 x = \cos^2 x$$

Use Table 8.1, For-
mulas 8 and 10