LaTeX Installation Test

Your Name

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Testing Basic LaTeX

This is a test document to verify that LaTeX is installed correctly.

Math Equations

Inline math: The famous equation is $E = mc^2$.

Display math:

$$\int_0^\infty e^{-x^2} dx = \frac{\sqrt{\pi}}{2}$$

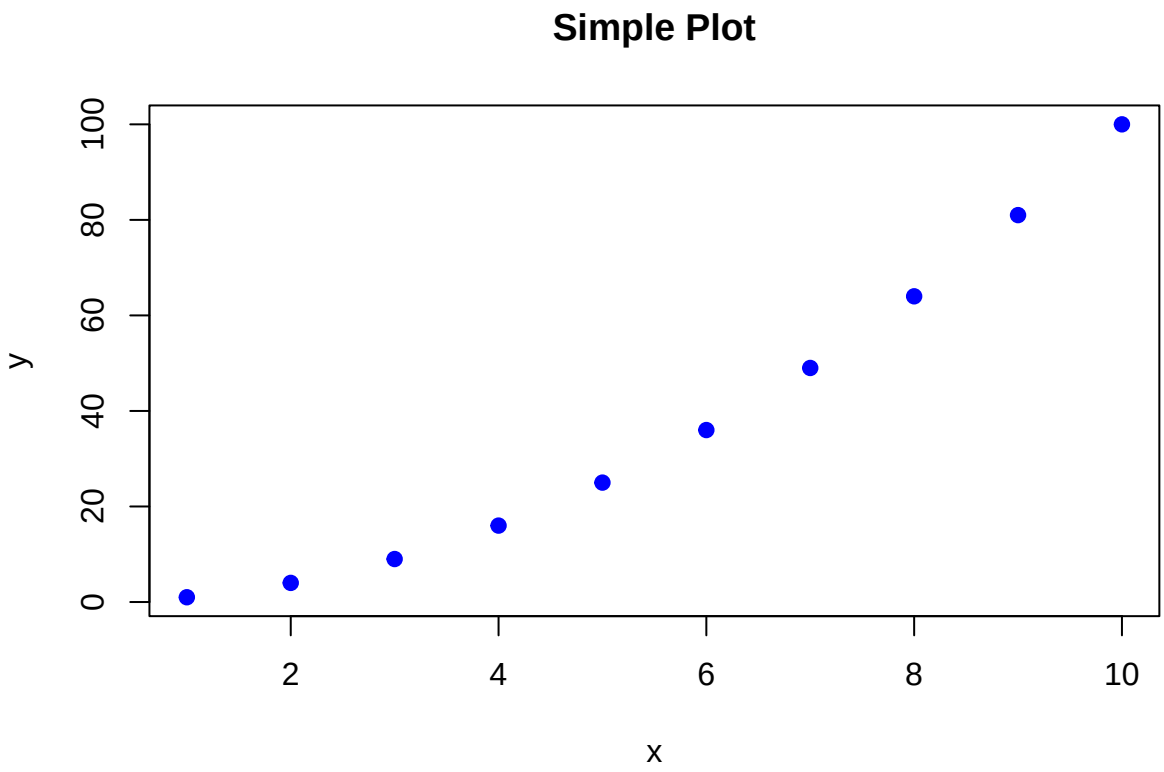
More Complex Equations

The quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

R Code and Output

```r
# Simple R code
x <- 1:10
y <- x^2
plot(x, y, main = "Simple Plot", pch = 19, col = "blue")
```



Tables

```
knitr::kable(head(mtcars[, 1:5]), caption = "Sample Data from mtcars")
```

Table 1: Sample Data from mtcars

	mpg	cyl	disp	hp	drat
Mazda RX4	21.0	6	160	110	3.90
Mazda RX4 Wag	21.0	6	160	110	3.90
Datsun 710	22.8	4	108	93	3.85
Hornet 4 Drive	21.4	6	258	110	3.08
Hornet Sportabout	18.7	8	360	175	3.15
Valiant	18.1	6	225	105	2.76

Greek Letters and Symbols

Some Greek letters: $\alpha, \beta, \gamma, \Delta, \Sigma$

Mathematical symbols: $\leq, \geq, \neq, \approx, \infty$

Conclusion

If you can see this PDF with:

Table 2: Student Grades by Subject

Name	Math	Science	English
Alice	85	90	88
Bob	92	88	85
Charlie	78	85	90
Diana	95	92	89

- Properly formatted equations
- A plot
- A table
- Mathematical symbols

Then **LaTeX is installed correctly!**

Method 1: Using knitr::kable() with LaTeX Caption

```
# Create sample data
students <- data.frame(
  Name = c("Alice", "Bob", "Charlie", "Diana"),
  Math = c(85, 92, 78, 95),
  Science = c(90, 88, 85, 92),
  English = c(88, 85, 90, 89)
)

# Create table with caption
knitr::kable(students,
             caption = "Student Grades by Subject",
             format = "latex",
             booktabs = TRUE)
```

Method 2: Using kableExtra for Advanced Formatting

```
library(kableExtra)
```

```
## Warning: package 'kableExtra' was built under R version 4.4.2
```

```
knitr::kable(students,
             caption = "Enhanced Student Performance Table",
             booktabs = TRUE) %>%
  kable_styling(latex_options = c("striped", "hold_position")) %>%
  column_spec(1, bold = TRUE) %>%
  row_spec(0, bold = TRUE, color = "white", background = "#4472C4")
```

Table 3: Enhanced Student Performance Table

Name	Math	Science	English
Alice	85	90	88
Bob	92	88	85
Charlie	78	85	90
Diana	95	92	89

Method 3: Pure LaTeX Table

You can also write pure LaTeX code directly:

Table 4: Sales Data for Q1 2024

Month	Revenue ($)	Units Sold
January	45,000	150
February	52,000	175
March	48,000	160
Total	**145,000**	**485**

Method 4: Table with Custom LaTeX Positioning

```
summary_data <- data.frame(
  Statistic = c("Mean", "Median", "SD", "Min", "Max"),
  Value = c(85.5, 87.0, 6.2, 78.0, 95.0)
)

knitr::kable(summary_data,
             caption = "\\label{tab:summary}Descriptive Statistics of Test Scores",
             format = "latex",
             booktabs = TRUE,
             align = c('l', 'r'))
```

Note: The `\label{tab:summary}` allows you to reference this table elsewhere in your document using `\ref{tab:summary}`.

Referencing Tables

You can reference Table 4 in your text using LaTeX commands.

Table 5: Descriptive Statistics of Test Scores

Statistic	Value
Mean	85.5
Median	87.0
SD	6.2
Min	78.0
Max	95.0

Key LaTeX Table Options

- **caption**: Adds a title to your table
- **label**: Allows cross-referencing
- **booktabs = TRUE**: Creates professional-looking tables
- **align**: Controls column alignment ('l' = left, 'c' = center, 'r' = right)
- **format = "latex"**: Ensures proper LaTeX output