

Latex Example and Snippet

```
\[ \text{Latex Example and Snippet} \]
```

Derive circle parametric equation

$\mathcal{V} \quad \mathcal{W}$

```
\mathcal{V}
\mathcal{W}
```

multiple line search(matrix block)	<code>/\\begin{bmatrix}*_\\.\\{-}\\end{bmatrix}</code>
multiple line search	<code>/\\begin{bmatrix}*_\\.\\{-}\\end{bmatrix}</code>

Greek Symbols

A α	E ϵ
B β	Z ζ
Γ γ	E η
Δ δ	Θ θ
E ϵ	I ι

crazy symbols

<code>\cdot</code>	\cdot
<code>\cdots</code>	\dots
<code>\ddots</code>	\ddots
<code>\reflectbox{\$\ddots\$}</code>	\ddots
<code>\vdots</code>	\vdots
<code>\vdots</code>	\vdots
<code>\frac{dy}{dx}</code>	$\frac{dy}{dx}$
<code>\dfrac{dy}{dx}</code>	$\frac{dy}{dx}$
<code>\frac{dy}{dx}</code>	$\frac{dy}{dx} = \frac{d^2y}{dx^2}$
<code>\dfrac{dy}{dx}</code>	$\frac{dy}{dx} = \frac{d^2y}{dx^2}$

```
\frac{\partial u}{\partial x} = h^2
\left( \frac{\partial^2 u}{\partial x^2} +
\frac{\partial^2 u}{\partial y^2} +
\frac{\partial^2 u}{\partial z^2}
\right)
```

$$\frac{\partial u}{\partial x} = h^2 \left(\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} \right)$$

Table

10	20	30	40	50
0.8	28	38	48	58
28	38	48	58	68
0.7	108	118	128	99
98	108	118	128	88

```
\begin{tabular}{|c|c|c|c|c|}
\hline
10 & 20 & 30 & 40 & 50 \\ \hline
0.8 & 28 & 38 & 48 & 58 \\ \hline
28 & 38 & 48 & 58 & 68 \\ \hline
0.7 & 108 & 118 & 128 & 99 \\ \hline
98 & 108 & 118 & 128 & 88 \\ \hline
\end{tabular}
```

$$f(n) = \begin{cases} n/2 & \text{if } n \text{ is even} \\ n+1 & \text{if } n \text{ is odd} \end{cases}$$

```
f(n) =
\begin{cases}
n/2 \quad \text{\text{if } } n \text{\text{ is even}} \\
n+1 \quad \text{\text{if } } n \text{\text{ is odd}}
\end{cases}
```

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

```
A= \begin{bmatrix}
1 & 2 & 3 \\
4 & 5 & 6 \\
7 & 8 & 9
\end{bmatrix}
```

$$A = \left| \begin{array}{ccc} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{array} \right|$$

```
A= \left| \begin{array}{ccc}
1 & 2 & 3
\end{array} \right|
```

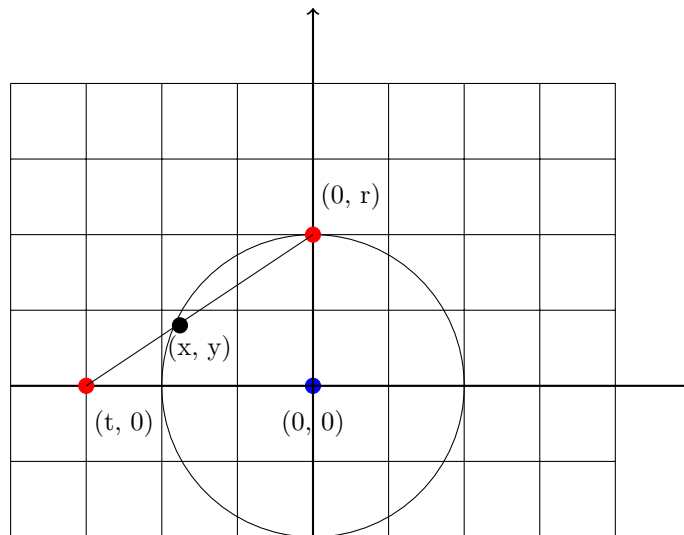
```
4 & 5 & 6\\
7 & 8 & 9
\end{array} \right|
```

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

```
A= \begin{matrix}
1 & 2 & 3\\
4 & 5 & 6\\
7 & 8 & 9
\end{matrix}
```

$$\left[\begin{array}{ccc|c} 1 & 2 & 3 & 1 \\ 4 & 5 & 6 & 2 \\ 7 & 8 & 10 & 5 \end{array} \right]$$

```
&\left[\begin{array}{ccc|c}
1 & 2 & 3 & 1\\
4 & 5 & 6 & 2\\
7 & 8 & 10 & 5\\
\end{array}\right]
```



```

\begin{tikzpicture}[yscale=-1]
  % 4x4 grid
  \draw (-2, 0) grid (6, 6);
  % origin point
  \draw [color=blue, fill=blue] (2, 4) circle (0.1);
  % x-axis
  \draw [thick,->] (-2, 4) -- (7, 4);
  % y-axis
  \draw [thick,->] (2, 6) -- (2, -1);
  % origin label
  \node at (2, 4.5) {(0, 0)};
  \draw (2, 4) circle (2);
  \draw [color=red, fill=red] (2, 2) circle(0.1);
  \node at (2.5, 1.5){(0, r)};
  \draw [color=red, fill=red] (-1, 4) circle(0.1);
  \node at (-0.5, 4.5){(t, 0)};
  \draw (2, 2)--(-1, 4);
  \node at (0.5, 3.5){(x, y)};
  \draw [color=black, fill=black] (0.24, 3.2) circle(0.1);
\end{tikzpicture}

```

1 Small Subscript

<https://tex.stackexchange.com/questions/262295/make-subscript-size-smaller-always>

```
\documentclass{article}
\catcode'\_=\active
\newcommand_[1]{\ensuremath{\sb{\scriptscriptstyle #1}}}{
Original: $A_{\scriptstyle 1}^2$ \\
new: $A_{\scriptscriptstyle 1}^2$ \\}
```

Original: A_1^2

new: A_1^2

2 Matrix dots

$$L_k = I + v_k e_k^* = \begin{bmatrix} 1 & & & & \\ & \ddots & & & \\ & & 1 & & \\ & & l_{k+1,k} & & \\ & & \vdots & \ddots & \\ & l_{m,k} & & & 1 \end{bmatrix}$$

```
L_k = I + v_k e_{k}^{*} = \begin{bmatrix}
1 & & & & \\
& \ddots & & & \\
& & 1 & & \\
& & l_{k+1,k} & & \\
& & \vdots & \ddots & \\
& l_{m,k} & & & 1
\end{bmatrix} \\
```

3 Change page size

```
%
\usepackage{geometry}
\geometry{paperwidth=18cm, paperheight=80cm}
```

4 Math Mode Text

$$x + y = z$$

$$x + y = z$$

This is long text for math mode x, y, z

$$x + y = z$$

$$x + y = z$$

```
x + y &= z \\
x + y &= z \\
\intertext{This is long text for math mode $x, y, z$}
x + y &= z \\
x + y &= z \\
```

$$x + y = z$$

$$x + y = z$$

(Where is x)

$$x + y = z$$

$$x + y = z$$

```
x + y &= z \\
x + y &= z \tag{ Where is $x$} \\
x + y &= z \\
x + y &= z \\
```

$$x + y = z$$

$$x + y = z \quad \text{Where is } x$$

$$x + y = z$$

$$x + y = z$$

```
x + y &= z \\
x + y &= z \quad \mbox{ Where is $x$} \\
x + y &= z \\
x + y &= z \\
```

5 Math mode inside verbatim

abc α , β , ϕ

The limit of function

$$\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

```
\begin{alltt}
\usepackage{alltt}
The limit of function \(\ \lim_{h \to 0} \frac{f(x + h) - f(x)}{h} \)
\end{alltt}
```

6 Set

\emptyset \cap \cup $|$
 $\{1, 2, 3, \dots\}$
 $\{x \mid x < 3 \text{ and } x > 10\}$
 $\mathcal{A} = \cup(U_\alpha, \phi_\alpha)$

```
\emptyset \quad \cap \quad \cup \quad \mid$ \\
$\{1, 2, 3, \dots \}$ \\
$\{ x \mid x < 3 \mbox{ and } x > 10 \}$ \\
$\mathcal{A} = \cup (U_{\alpha}, \phi_{\alpha})$
```