

Practical LaTeX # 20

Stretchable Horizontal Lines

Stretchable Horizontal Lines

- There are three stretchable horizontal lines
 - Braces
 - Bars
 - Arrows
- These can appear above or below the formula.

Horizontal Braces

- `\overbrace`, adds the **brace over** the formula
- `\underbrace`, adds the **brace under** the formula

`$\overbrace{a + b + \dots + z}$`

$$\overbrace{a + b + \dots + z}$$

`$\overbrace{a + b + \dots + z}^n$`

$$\overbrace{a + b + \dots + z}^n$$

`$\underbrace{1 + 2 + \dots + 99 + 100}$`

$$\underbrace{1 + 2 + \dots + 99 + 100}$$

Horizontal Lines/Bars

- `\overline`, adds the **line/bar over** the formula
- `\underline`, adds the **line/bar under** the formula

`\overline{X}`

\overline{X}

`\underline{X}`

\underline{X}

`$\overline{\overline{X} \cup \overline{X}}$`
`$\overline{\overline{\overline{X}}}$`

$\overline{\overline{X} \cup \overline{X}} = \overline{\overline{\overline{X}}}$

Horizontal Arrows

- `\overleftarrow`, adds the **left arrow over** the formula
- `\overrightarrow`, adds the **right arrow over** the formula
- `\overleftrightarrow`, adds the **left and right arrow over** the formula
- `\underleftarrow`, adds the **left arrow under** the formula
- `\underrightarrow`, adds the **right arrow under** the formula
- `\underleftrightarrow`, adds the **left and right arrow over** the formula

Horizontal Arrows

WPG

```
\usepackage{amsmath}
```

```
 $\overleftarrow{A}$   
 $\overrightarrow{A}$   
 $\overleftrightarrow{A}$   
 $\underleftarrow{A}$   
 $\underrightarrow{A}$   
 $\underleftrightarrow{A}$ 
```

\overleftarrow{A}

\overrightarrow{A}

\overleftrightarrow{A}

\underleftarrow{A}

\underrightarrow{A}

\underleftrightarrow{A}

Example

$\underbrace{u' - P(x)u^2 - Q(x)u - R(x)}_{\text{= 0 since u is partial solution}}$

$$\underbrace{u' - P(x)u^2 - Q(x)u - R(x)}_{= 0 \text{ since u is partial solution}}$$

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