WPG

Practical LaTeX # 21

Equation Environment

```
\begin{equation}

\end{equation}
```

Equation Environment

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- An **equation environment** creates a **displayed formula**.
- It is used to **write one equation formula**.
- It is the **simplest form of a formula that is not inline**.
- The equation environment **automatically generates the equation number**.

Equation Environment

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```
\section{Distance Formula}

\par \textbf{Distance Formula for Points in the Plane}  \\

\par The distance between $P(x_1, y_1)$ and $Q(x_2, y_2)$ is

\begin{equation}
    d = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}
\end{equation}
```

2 Distance Formula

Distance Formula for Points in the Plane

The distance between $P(x_1, y_1)$ and $Q(x_2, y_2)$ is

$$d = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \tag{1}$$

Symbolic referencing

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- Equations can be referenced **without remembering their equation numbers.**
- **To reference the equation**, give a **symbolic label** by using the **\label{}** command.
- The **equation can be referenced** by the **\ref{}** command.
- The **page reference of the equation** can be obtained by the **\pageref{}** command.

Symbolic referencing

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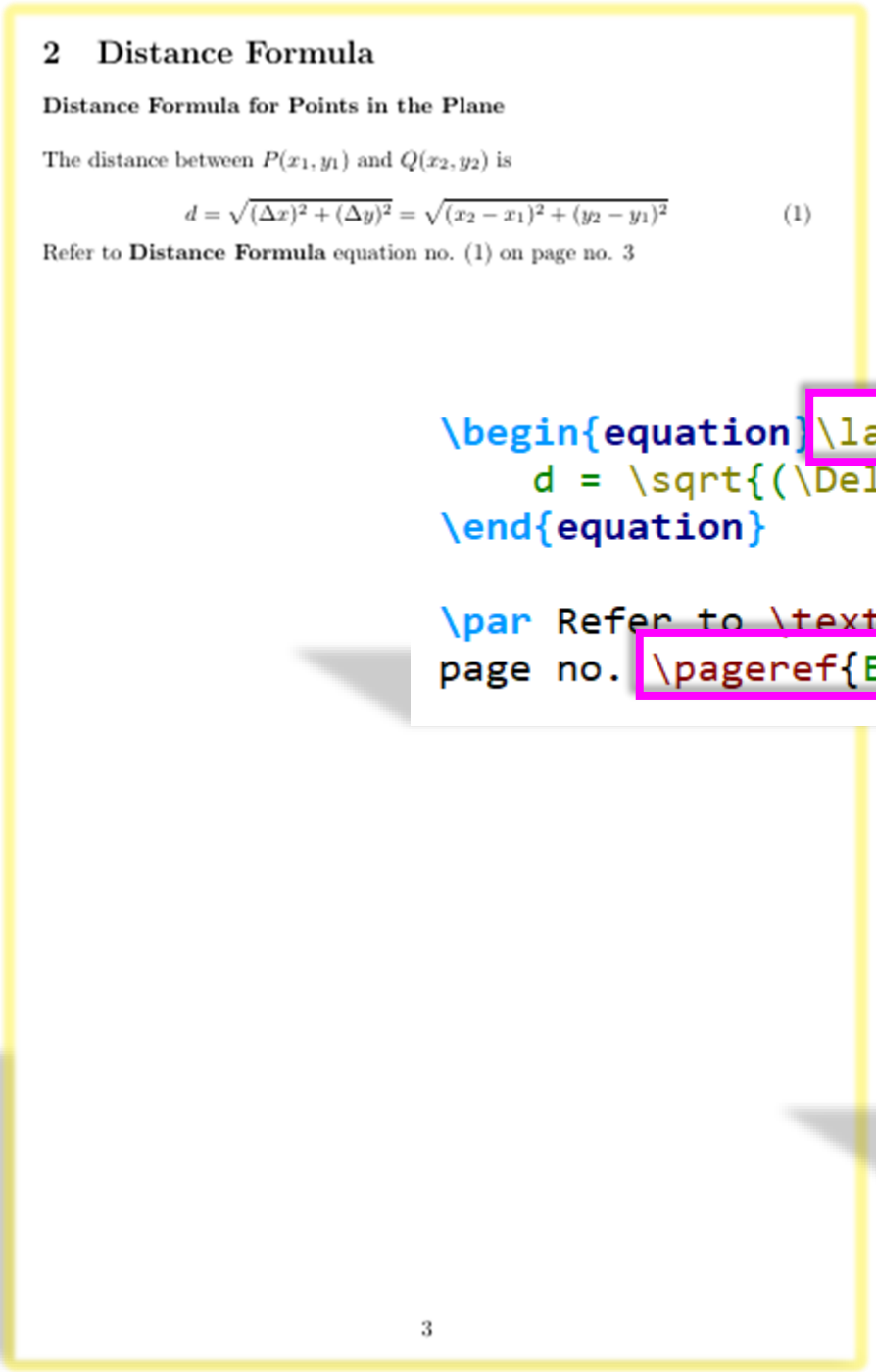

2 Distance Formula

Distance Formula for Points in the Plane

The distance between $P(x_1, y_1)$ and $Q(x_2, y_2)$ is

$$d = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \quad (1)$$

Refer to **Distance Formula** equation no. (1) on page no. 3

3

```
\begin{equation}\label{E: Distance Formula}
    d = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}
\end{equation}

\par Refer to \textbf{Distance Formula} equation no. (\ref{E: Distance Formula}) on
page no. \pageref{E: Distance Formula}
```

2 Distance Formula

Distance Formula for Points in the Plane

The distance between $P(x_1, y_1)$ and $Q(x_2, y_2)$ is

$$d = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \quad (1)$$

Refer to **Distance Formula** equation no. (1) on page no 3

Absolute referencing

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- Equations can also be **tagged by attaching a name to the formula** with the **\tag{}** command.
- The **\tag{}** command **replaces** the equation number.

Absolute referencing

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```
\section{Distance Formula}

\par \textbf{Distance Formula for Points in the Plane}  \\

\par The distance between $P(x_1, y_1)$ and $Q(x_2, y_2)$ is

\begin{equation}\tag{Distance Formula}
d = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}
\end{equation}
```

3 Distance Formula

Distance Formula for Points in the Plane

The distance between $P(x_1, y_1)$ and $Q(x_2, y_2)$ is

$$d = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \qquad \text{(Distance Formula)}$$

Equation Numbers Within Section

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- Equation numbers can be given **according to the section numbers**.
- **Write the following command** in the **preamble part** of the body before the **\begin{document}** environment.

```
\numberwithin{equation}{section}
```

2 Distance Formula

Distance Formula for Points in the Plane

The distance between $P(x_1, y_1)$ and $Q(x_2, y_2)$ is

$$d = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \qquad (2.1)$$

Refer to **Distance Formula** equation no. (2.1) on page no. 3

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