By Ali Reza Khoddami and applying several environments

1. ```
   \begin{itemize}
   \item
   If $x$ is even and $y$ is odd then $x+y$ is odd.
   \item
   If $x$ is even and $y$ is even then $x+y$ is even.
   \item
   If $x$ is odd and $y$ is odd then $x+y$ is even.
   \end{itemize}
   ```

   - If x is even and y is odd then $x + y$ is odd.
   - If x is even and y is even then $x + y$ is even.
   - If x is odd and y is odd then $x + y$ is even.

2. ```
   \renewcommand{\labelitemi}{$\otimes$}
    \begin{itemize}
   \item
   If $x$ is even and $y$ is odd then $x+y$ is odd.
   \item
   If $x$ is even and $y$ is even then $x+y$ is even.
   \item
   If $x$ is odd and $y$ is odd then $x+y$ is even.
   \end{itemize}
   ```

   - ⊗ If x is even and y is odd then $x + y$ is odd.
   - ⊗ If x is even and y is even then $x + y$ is even.
   - ⊗ If x is odd and y is odd then $x + y$ is even.

3. ```
   \renewcommand{\labelitemi}{$\blacktriangleright$}
    \begin{itemize}
   \item
   If $x$ is even and $y$ is odd then $x+y$ is odd.
   \item
   If $x$ is even and $y$ is even then $x+y$ is even.
   \item
   If $x$ is odd and $y$ is odd then $x+y$ is even.
   \end{itemize}
   ```

   - ▶ If x is even and y is odd then $x + y$ is odd.
   - ▶ If x is even and y is even then $x + y$ is even.
   - ▶ If x is odd and y is odd then $x + y$ is even.

4. ```
   \renewcommand{\labelitemi}{$\divideontimes$}
    \begin{itemize}
   \item
   If $x$ is even and $y$ is odd then $x+y$ is odd.
   \item
   ```

```
If $x$ is even and $y$ is even then $x+y$ is even.
\item
If $x$ is odd and $y$ is odd then $x+y$ is even.
\end{itemize}
```

- If x is even and y is odd then $x+y$ is odd.
- If x is even and y is even then $x+y$ is even.
- If x is odd and y is odd then $x+y$ is even.

5.
```
\begin{enumerate}
\item
If $x$ is even and $y$ is odd then $x+y$ is odd.
\item
If $x$ is even and $y$ is even then $x+y$ is even.
\item
If $x$ is odd and $y$ is odd then $x+y$ is even.
\end{enumerate}
```

(a) If x is even and y is odd then $x+y$ is odd.

(b) If x is even and y is even then $x+y$ is even.

(c) If x is odd and y is odd then $x+y$ is even.

6.
```
\begin{align*}
(sinx+cosx)^2-sinxcosx&=sin^2x+2sinxcosx+cos^2x-sinxcosx\\
&=1+sinxcosx\\
&=1+\frac{1}{2}sin2x
\end{align*}
```

$$\begin{aligned}(sinx+cosx)^2-sinxcosx&=sin^2x+2sinxcosx+cos^2x-sinxcosx\\&=1+sinxcosx\\&=1+\frac{1}{2}sin2x\end{aligned}$$

7.
```
\begin{align*}
\frac{\Vert T\otimes S-T^2\otimes S^2\Vert}{\Vert S-T\Vert+\Vert S^2+ T^2\Vert}
&\leqslant \frac{\Vert S\circ T\Vert^3}{\Vert S+T\circ S^2\Vert^4}\\
&\leqslant 12\Vert S\Vert+3\Vert T\Vert+8\\
&=5\Vert S^3-T^5\Vert+10.
\end{align*}
```

$$\begin{aligned}\frac{\|T\otimes S-T^2\otimes S^2\|}{\|S-T\|+\|S^2+T^2\|}&\leqslant\frac{\|S\circ T\|^3}{\|S+T\circ S^2\|^4}\\&\leqslant 12\|S\|+3\|T\|+8\\&=5\|S^3-T^5\|+10.\end{aligned}$$

8.
```
$f(x)=$
\begin{cases}
{sin^2x+cosx^2-10, & \text{if} \ x< -4\\
4x^2+3x+\frac{1}{2}, & \text{if}\  -4\leqslant x<10\\
sinhx, & \text{if}\ x\geqslant 10
\end{cases}}
```
$$f(x)=\begin{cases} sin^2x+cosx^2-10, & \text{if } x<-4 \\ 4x^2+3x+\frac{1}{2}, & \text{if } -4\leqslant x<10 \\ sinhx, & \text{if } x\geqslant 10 \end{cases}$$

9.
```
$g(x)=$
\begin{cases}
2x, & x<-100\\
5x^3, & -100<x<200\\
34x^5+12, & 200\leqslant x\leqslant 500\\
cosh^5x, & x\geqslant 700
\end{cases}
```
$$g(x)=\begin{cases} 2x, & x<-100 \\ 5x^3, & -100<x<200 \\ 34x^5+12, & 200\leqslant x\leqslant 500 \\ cosh^5x, & x\geqslant 700 \end{cases}$$

10.
```
\begin{description}
\item[limit point :] a point $x\in X$ is a limit point of $A$ if ...
\item[interior point :] a point $x\in A$ is an interior point of $A$ if ...
\item[boundry point :] a point $x\in X$ is a boundry point of $A$ if ...
\end{description}
```

limit point : a point $x \in X$ is a limit point of A if ...

interior point : a point $x \in A$ is an interior point of A if ...

boundary point : a point $x \in X$ is a boundary point of A if ...

Be successful
Ali Reza Khoddami