

calc_logic_example

Student Group

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example for a simplification with the rule for boolean algebra

$$\overline{a \vee (b \wedge (\bar{a} \vee c) \wedge 1) \vee a} \quad \& \quad \quad \& \quad \quad \quad \end{array} \end{align*}$$

example for a simplification with the rule for boolean algebra

$$\overline{a \vee (b \wedge (\bar{a} \vee c) \wedge 1) \vee a}$$

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example for a simplification with the rule for boolean algebra

[illegible]

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example for a simplification with the rule for boolean algebra

$$\begin{array}{ll} \overline{a \vee (b \wedge (\bar{a} \vee c) \wedge 1)} \vee a & \\ \quad\quad\quad\quad\quad\quad\quad\quad\quad\quad & \\ \quad\quad\quad\quad\quad\quad\quad\quad\quad\quad & \end{array}$$

At first we will switch the representation to the following:

```
\begin{align*} \begin{array}{ll} \overline{a \lor (b \land (\bar{a} \lor c) \land 1) \lor a} & \\ \color{white}{\overline{ab}} & \\ \quad\quad\quad\quad\quad\quad & \\ \quad\quad\quad\quad\quad\quad & \\ \quad\quad\quad\quad\quad\quad & \end{array} \end{align*}
```

At first we will switch the representation to the following:

```
\begin{align*} \begin{array}{ll} /(a + (b \cdot (/a + c) \cdot 1) + a) & \color{white}{\overline{ab}} \\ \quad\quad\quad\quad\quad\quad & \\ \quad\quad\quad\quad\quad\quad & \quad\quad\quad\quad\quad\quad \\ \quad\quad\quad\quad\quad\quad & \end{array} \end{align*}
```

1. $\color{blue}{\text{Neutral Element}}$

```
\begin{align*} \begin{array}{ll} /(a + (b \cdot (/a + c) \color{blue}{\cdot 1}) + a) & \\ \color{white}{\overline{ab}} & \\ \quad\quad\quad\quad\quad\quad & \\ \quad\quad\quad\quad\quad\quad & \end{array} \end{align*}
```

1. $\color{blue}{\text{Neutral Element}}$

```
\begin{align*} \begin{array}{ll} /(a + (b \cdot (/a + c) \quad) + a) & \color{white}{\overline{ab}} \\ \quad\quad\quad\quad\quad\quad & \\ \quad\quad\quad\quad\quad\quad & \quad\quad\quad\quad\quad\quad \\ \quad\quad\quad\quad\quad\quad & \end{array} \end{align*}
```

2. $\color{blue}{\text{Commutative Law}}$

```
\begin{align*} \begin{array}{ll} /(a + \color{blue}{(b \cdot (/a + c) \quad \vee ) + a}) & \\ \color{white}{\overline{ab}} & \\ \quad\quad\quad\quad\quad\quad & \\ \quad\quad\quad\quad\quad\quad & \end{array} \end{align*}
```

2. $\color{blue}{\text{Commutative Law}}$

```
\begin{align*} \begin{array}{ll} /(a + a + (b \cdot (/a + c) \quad \vee )) & \color{white}{\overline{ab}} \\ \quad\quad\quad\quad\quad\quad & \\ \quad\quad\quad\quad\quad\quad & \quad\quad\quad\quad\quad\quad \\ \quad\quad\quad\quad\quad\quad & \end{array} \end{align*}
```

3. $\color{blue}{\text{Idempotence}}$

```
\begin{align*} \begin{array}{ll} /(\color{blue}{a + a} + (b \cdot (/a + c))) & \end{array} \end{align*}
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