Consider the following “proofs”.

$$
\begin{aligned}
&1 \\
&= (-1)(-1) \\
&= \sqrt{(-1)(-1)} \\
&= \sqrt{-1}\ \sqrt{-1} \\
&= i \cdot i \\
&= i^2 \\
&= -1
\end{aligned}
$$

$\therefore\ 1 = -1$

What went wrong?

$$
\begin{aligned}
4 &= (-2)(-2) \\
\sqrt{4} &= \sqrt{(-2)(-2)} \\
\sqrt{4} &= \sqrt{-2}\ \sqrt{-2} \\
\sqrt{4} &= i\sqrt{2} \cdot i\sqrt{2} \\
\sqrt{4} &= i^2 \sqrt{2} \cdot \sqrt{2} \\
\sqrt{4} &= 2\, i^2 \\
2 &= -2
\end{aligned}
$$

$\therefore\ 2 = -2$

What went wrong?

A copy of the laws for manipulating square roots is attached to this.